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公共性语境下广州滨水工业遗产更新策略研究——以广州太古仓码头区为例

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**Publicness as Renewal Strategy for Guangzhou
Waterfront Industrial Heritage: in the Case of Taikoo
Warehouse & Wharf Area**

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摘要

从 20 世纪 90 年代开始，中国的城市化进程加速，城市中心区的滨水工业功能逐渐外迁，城市水岸功能从工业生产向公共生活转变，原来处在城市边缘的滨水旧工业用地逐渐被纳入城市更新的规划之中并逐渐成为热门。基于综合价值对可再利用的滨水工业遗产进行精细化更新，在保护城市历史的同时为现代公共生活释放更多空间和资源，有着紧迫的现实意义。

但我国在相关研究上尚且处于探索阶段，全国各地的研究进度参差不齐，更新实践显现出种种问题。作为我国工业的发源地，广州有着丰富的可再利用滨水工业遗产资源，但由于相关理论研究的稀缺、商业因素的主导地位以及社会各方对工业遗产的价值认知较低，部分更新实践存在工业遗产被拆除，新功能与工业历史关系薄弱、项目定位与周边城市关系薄弱、工业遗产和滨水空间私有化以及场地工业历史被掩盖等问题。

基于上述背景，本研究通过梳理相关理论和实践案例，明确公共性理念对广州滨水工业遗产更新的指导意义。在梳理广州滨水工业遗产的历史形成、现状特征以及更新情况，明确广州滨水工业遗产现有更新中存在的主要问题和矛盾后，选出太古仓码头区作为典型案例，为其提出基于公共性理念的更新策略。

本论文的主要内容分为六个部分，由六个章节组成。

第一部分是绪论部分。介绍了本文的研究背景、目的和意义，明确了相关研究对象和概念以及研究内容和方法，提出本文的基本框架。

第二部分是文献研究。梳理国内外对城市滨水区更新、滨水工业遗产更新以及公共性理念的研究情况，并提出将公共性理念应用于广州滨水工业遗产更新策略的研究方向。

第三部分是相关实践案例的研究。在考虑了不同地域、公共性理念的不同应用方法后，从国内、亚洲和欧洲的滨水工业遗产更新案例选取了三个具有较强公共性的典型案例，从可达性、开放性、包容性、可识别性和文化延续性五个维度进行公共性分析，总结归纳出公共性理念对广州滨水工业遗产更新的具体策略参考。

第四部分是广州滨水工业遗产特征和保护利用现状研究。首先梳理广州城市发展与水岸的关系演变以及 6 个滨水工业遗产片区的历史形成、更新现状以及周边城市环境情况，之后提炼出广州滨水工业遗产园区、工业遗产以及滨水开放空间的主要特征以及保护和利用现状在保护制度以及更新实践上显现的共性特征，并将广州太古仓码头区确定为典型案例，在后续工作中对其进行细化调研和更新设计。

第五部分是对广州太古仓码头区及其周边地区的调研。通过文献研究与实地调研深入了解广州太古仓码头及其周边地区，分析滨水工业遗产的历史价值、现状环境条件和使用情况。

第六部分是广州太古仓码头区的更新方案。以公共性理念为指导，基于调研结果，为广州太古仓码头区的更新提出工业遗产文化街区的新定位，从工业遗产、交通、功能和空间形态四个方面提出对应的更新策略。

本文希望通过对公共性理念和广州滨水工业遗产现状的理论研究和应用实践，引起规划者对工业遗产更新中平衡公共利益与经济利益，以及建立滨水空间、工业遗产以及城市之间的有机联系的关注和思考，为广州滨水工业遗产更新实践提供新思路。

关键词：广州；公共性；滨水工业遗产； 更新策略

Abstract

Since the 1990s, urbanization process in China has accelerated, and the industries in the waterfront area in the city center have gradually moved out. The urban waterfront area has changed from industrial production to public life, being included in urban renewal plans and has gradually gained its popularity. Based on the comprehensive value, it is urgent to refine and renew the reusable waterfront industrial heritage, protect the city's history and release more space and resources for modern public life.

However, China is still in the exploratory stage of relevant research, whose progress is uneven across the country, and various problems have emerged in the renewal practice. As the cradle of Chinese industry, Guangzhou has abundant reusable waterfront industrial heritage resources. Due to the scarcity of relevant theoretical research, the dominant position of commercial factors and the low awareness of the value of industrial heritage by all parties in society, some problems occurred, such as the demolition in the process, the weak relationship between new functions and industrial history, and between project positioning and surrounding urban area, the privatization of industrial heritage and waterfront space, and the cover-up of the industrial history of the site.

Therefore, this essay clarifies the guiding significance of the concept of publicness for the renewal of Guangzhou's waterfront industrial heritage by sorting out relevant theories and practices. After sorting out the historical formation, current characteristics and renewal progress of Guangzhou waterfront industrial heritage, and the main problems and contradictions of the existing renewal practices, Guangzhou Taikoo Warehouse & Wharf Area is chosen as the representative and a renewal strategy based on the concept of publicness is proposed for it.

The main content of this paper is divided into six parts, composed by six chapters.

The first part is the introduction. This part introduces the research background, purpose and significance of this paper, clarifies the relevant research objects and concepts, as well as the research content and methods, and put forward the basic framework.

The second part is the literature review. Firstly, the domestic and foreign research on urban waterfront renewal, waterfront industrial heritage renewal and the concept of publicity is sorted out, and the research direction of applying the concept of publicity to the renewal strategy of Guangzhou's waterfront industrial heritage is proposed.

The third part contains the relevant case study. Considering the application methods of publicness concept in different regions, three typical cases of waterfront industrial heritage renewal projects with strong publicity are selected from domestic, Asian and European cases. Publicity is analyzed from five basic dimensions of accessibility, openness, inclusiveness, identifiability and cultural continuity. In the end, the guiding significance and referential method of the publicness concept for the renewal of Guangzhou's waterfront industrial heritage are summarized.

The fourth part is the research on the characteristics and protection and utilization status of Guangzhou waterfront industrial heritage. Firstly, the evolution of the relationship between Guangzhou's urban development and the waterfront, as well as the historical formation, renewal status, and surrounding urban environment of the six waterfront industrial heritage areas are sorted out, followed by extracting the main features and status quo of protection and utilization of the Guangzhou Waterfront Industrial Heritage Parks, industrial heritages, and waterfront open space. Lastly, the Guangzhou Taikoo Warehouse & Wharf Area is identified as the typical case, to which detailed research and update design will be carried out in the follow-up work.

The fifth part is the research on the status quo of Guangzhou Taikoo Warehouse & Wharf Area and its surrounding area. Through literature research and on-the-spot research, its historical value, current environmental conditions and utilization situation is analyzed and an in-depth understanding of the site and its surrounding areas is gained.

The sixth part is the renewal design scheme of Guangzhou Taikoo Warehouse & Wharf Area. Based on the concept of publicness and the status quo research results, a new positioning of the industrial heritage cultural block is proposed for the renewal project, and corresponding renewal strategies are proposed from four aspects of industrial heritage regeneration, transportation,

function and spatial form.

This paper aims to arouse planners' attention to the balance of public interests and economic interests in the renewal of industrial heritage, and the establishment of an organic relationship between waterfront space, industrial heritage, and the city by researching on theories and application practices of the concept of publicness and the status quo of waterfront industrial heritage in Guangzhou. Moreover, the author hopes to provide new ideas for the renewal practice of Guangzhou waterfront industrial heritage.

Keyword: Guangzhou, Publicness, Waterfront Industrial Heritage, Renewal Strategy

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Chapter1 Introduction

1.1 Background

1.1.1 Significance of Waterfront Industrial Heritage Renewal in Urban Stock Planning

The development of industry is the fuel for urban development, creating the core area of the city, which is an important stage in the history of human civilization. However, due to the continuous development and expansion of the city, the waterfront old industrial areas no longer meet the functional needs of the city core area, and factories are gradually relocated outside the cities under the guidance of policy and economic factors. At the beginning of the 20th century, China began to enter the era of post-industrialization. Since a group of old factories along the Suzhou River in Shanghai were transformed into creative parks in the 1990s, the transformation of waterfront old industrial buildings has gradually become a social hotspot, and practices across the country increase. The society's awareness of the historical, cultural and aesthetic value of the waterfront industrial heritage has gradually deepened. Today, when the urbanization rate exceeds 60%, the city has transformed from incremental development to stock planning, and the importance of waterfront industrial heritage renewal is increasing. Compared with traditional historical relics, generally speaking, urban waterfront industrial heritages cover larger areas, having a shorter service life and stronger structural performance, and can withstand relatively high-intensity renovation projects. To sum up, it is imperative to carry out urban renewal projects to make more efficient and reasonable use of the land, facilities and cultural resources of the waterfront industrial heritage.

1.1.2 Opportunities and Challenges of Waterfront Industrial Heritage Renewal

Originally, the waterfront industrial area is an urban space that mainly serves production activities. With the cessation of production activities, its material relationship with the city no longer exists. The key of the waterfront industrial heritage renewal is to discover, excavate and continue its core values, reintegrated into modern urban life with a new identity. The core value of waterfront industrial heritage is not only derived from the historical, cultural, technological and artistic values of the past, but also includes the social, economic and ecological values brought about by renewal and transformation for the present and the future. The transformed waterfront industrial heritage, on the one hand, can serve as the historical and cultural carrier of the city, continue the urban context, and preserve the city's memory. On the other hand, it can also establish a close material connection with modern urban life, enrich urban public life, and provide new development opportunities for the revival of the central city.

However, compared with decades of research and practice in the field of waterfront industrial heritage renewal in western developed countries, China is still in the exploratory stage in this field and the research progress is uneven across the country. Insufficient theory and practical experience lead to various problems in the renewal activities, for instance, the excessive pursuit of economic benefits in the transformation leads to the destruction of the waterfront industrial heritage, or the over-strict protection of the waterfront industrial heritage making it difficult to carry out normal renewal and transformation. Therefore, how to strike a balance between historical protection and urban development, as well as public interests and economic interests, is the most urgent problem to be solved in the renewal of waterfront industrial heritage.

1.1.3 The Renewal of Waterfront Industrial Heritage in Guangzhou Urgently Needs Targeted Theoretical Guidance

As an important industrial city and trading city in South China, Guangzhou was the first to

come into contact with Western modern industry. It is the cradle of Chinese modern industry and national capital industry, and has an important position in the history of Chinese urban development. Under the influence of natural and social environment, the industrial heritage in Guangzhou is mostly distributed along the Pearl River, and has regional characteristics in terms of architectural style and greening. Therefore, the targeted protection and reuse of Guangzhou waterfront industrial heritage is of great significance to the urban image of Guangzhou and even China.

At the beginning of the 21st century, Guangzhou began to vigorously carrying out the urban renewal campaign. Policies and institutions related to the transformation of old industrial areas were successively implemented and established, which provided an essential foundation for the renewal practices of old industrial areas in Guangzhou. However, there are still few related theoretical studies, where renewal practice is ahead of theoretical research. So far, some old industrial areas have undergone a round of renovation, among which there are successful renewal cases, such as the T.I.T Creative Park, the Party Pier, the 1850 Creative Park etc., but there are also unsatisfactory examples, such as the Taikoo Warehouse & Wharf Area, the Redtory and the Guangzhou Overseas Chinese Sugar Factory, which have problems of excessive commercialization, insufficient protection of historical culture, and low public and social value. Looking back at the present, there are still lots of waterfront industrial heritages in Guangzhou that are waiting for renovation, or still in production but will also face relocation and renovation in the future. Therefore, systematically sorting out the historical formation and renewal status of Guangzhou waterfront industrial heritages and proposing a more targeted renewal strategy have great practical significance for the current situation.

1.2 Purpose and Significance

1.2.1 Purpose

Due to the lack of emphasis on the cultural connotation of industrial heritage in the renewal of

waterfront areas in Guangzhou, there are problems of excessive commercialization and privatization of waterfront industrial heritage in the renewal projects. This thesis takes Guangzhou Taikoo Warehouse & Wharf Area as an example, adding a perspective of publicness, which focuses on improving the quality of urban public life and promoting social interaction, to explore the relationship between industrial heritage protection and waterfront public space design in the renewal strategy of Guangzhou's waterfront area.

1.2.2 Significance

(1) Theoretical Significance

By analyzing domestic and foreign research literature on urban waterfront renewal, waterfront industrial heritage renewal, and the concept of publicness, the author finds that Guangzhou, which has rich waterfront industrial heritage, has few theoretical studies on composite renewal of waterfront area and industrial heritage in which case studies from social and cultural perspectives are scarce. Combining the research on the overall status quo of Guangzhou waterfront industrial heritage and the detailed investigation of the Taikoo W & W area in Guangzhou, it is found that the existing renewal is relatively weak in terms of social and cultural aspects. The concept of publicness is a space concept proposed by scholars in the western urban and social fields in order to solve the problems of hollowness, commercialization and privatization of modern urban space and social differentiation. In the process of localization, urban public space and cultural architecture are the main adapted fields in China. Therefore, this paper introduces the concept of publicness into the research on the renewal of Guangzhou's waterfront industrial heritage, on the one hand, it makes up for the lack of consideration of social and cultural factors in the renewal of Guangzhou's waterfront industrial heritage, and fills in the local gaps in domestic waterfront and waterfront industrial heritage renewal research. On the other hand, it broadens the scope of application of the concept of publicness.

(2) Practical Significance

At the macro level, formulating a more systematic and comprehensive renewal strategy for typical case of Guangzhou waterfront industrial heritage based on the concept of publicness can provide a referential template for further renewal practices of Guangzhou city and other cities as well.

At the site level, the renewal strategy based on the concept of publicness proposed in this thesis not only protects the historical and cultural value and regional characteristics of the industrial heritage, but also integrates waterfront space, industrial heritage and new urban space to improve the overall quality of the site. While improving the accessibility, openness, inclusiveness and recognizability of the waterfront industrial heritage and the surrounding cities, it also provides urban residents with high-quality public life with rich cultural connotations and enhance the overall image of the city.

1.3 Research Object and Concept Definition

1.3.1 Urban Waterfront Area

The rise and fall of cities in history is closely related to water transportation. From the early villages living by the water to the waterfront area with new uses transformed from the old port, this process embodies the diversity of the urban waterfront area and its significance for living, industry and business. On the spatial level, the waterfront area is a specific spatial location in the city, referring to the urban space adjacent to water bodies such as rivers, lakes, and oceans, and generally consists of three parts: water area, waterfront line, and land area. In a psychological sense, any space that feels associated with water or is part of an urban waterfront can be defined as a waterfront.^[1] The concept of urban waterfront embodies the distinctive features of diversity and publicness.^[2]

1.3.2 Industrial Heritage

In 2003, the International Industrial Heritage Conservation Association elaborated the concept of industrial heritage in the *Nizhny Tagil Charter*: industrial heritage refers to buildings, structures, crafts, tools and other material and non-material manifestations that are produced by industrial activities and have historical, technological, social, and artistic values. Industrial heritage is divided into three categories: immovable industrial relics and industrial buildings, movable industrial heritage, and intangible industrial culture. The immovable industrial relic refers to the place for industrial activities, and the immovable industrial building refers to the building groups formed by industrial agglomeration and the industrial building areas, which are the main renewal objects of this thesis. Movable industrial heritage refers to material heritage such as tools, mechanical equipment, office supplies, trademarks, product samples, written records, pictures, audio and video required for industrial production. Non-material industrial culture refers to production technology, technological process and so on.

1.3.3 Publicness

Publicness is an interdisciplinary concept involving philosophy, political science, sociology, and urban space. Different disciplines have different interpretations of publicness but are closely related to each other. The publicness in this article, without special explanation, refers to the concept in the field of urban design. Through sorting out the contemporary research on the concept of publicness, this paper puts forward in Section 2.3 that the publicness of urban space is defined by the effect of material space on social interaction, and the strength of publicness depends on the quality of public life taking place inside, being evaluated from five dimensions of space accessibility, openness, inclusiveness, recognizability and cultural continuity.

1.3.4 Renewal Strategy

The concept of urban renewal was defined at the Urban Renewal Research Conference in 1858, that is, due to the unsatisfaction with the living environment and the lack of support for other recreational activities, urban citizens put forward enhancing requirements for land use, urban form and even the overall planning of the city. The renewal strategy referred to in this article is to adjust and change the overall or partial urban built environment through renovation, reuse and partially new construction in terms of urban planning and design, architectural design and landscape design, so as to meet the needs of contemporary and modern society needs.

1.4 Research Content

The research content of this thesis can be divided into five parts:

(1) Literature Research: Urban Waterfront Renewal, Waterfront Industrial Heritage Renewal and the Concept of Publicness

This paper sorts out the domestic and foreign research on the renewal of urban waterfront area, the renewal of waterfront industrial heritage, and the concept of publicness, finding out the shortcomings of domestic research status quo on the renewal of waterfront industrial heritage, especially in Guangzhou area. Moreover, the definition, basic principles and applicatory research status of the concept of publicness is clarified. Finally, the innovative theoretical research direction of applying the concept of publicness to the research on the renewal strategy of Guangzhou waterfront industrial heritage is put forward.

(2) Case Study: Waterfront Industrial Heritage Renewal Projects directed by Publicness

This paper collects and selects typical renewal cases from different regions with similar urban location conditions as Guangzhou waterfront industrial heritages, and conducts analysis on the renewal strategy based on the framework of the concept of publicness, and further clarifies the

strategic form of the concept of publicness in the specific renewal practices, providing a reference for the formulation of the follow-up renewal strategy for the typical case of Guangzhou waterfront industrial heritage.

(3) Status Quo Research: Guangzhou Waterfront Industrial Heritage

By sorting out the evolution of the relationship between waterfront space and the city, as well as the history and distribution status of the six waterfront industrial heritage areas, the characteristics of the current status of Guangzhou waterfront industrial heritage parks, heritage and waterfront open space are clarified. Furthermore, through the analysis of the system of protection and utilization of waterfront industrial heritage in Guangzhou and the status quo of renewal practice, the advantages and disadvantages of the existing renewal strategies are summarized, founding the basis for the subsequent selection of typical case for detailed research and design.

(4) Status Quo Research: Guangzhou Taikoo Warehouse & Wharf Area

With the method of literature research, field research and questionnaire survey, this part analyzes the location, history and culture, population, traffic, facility, landscape, the previous renewal projects of the site, the current status of use and the users' characteristics and evaluation of Taikoo W&W Area. It is clarified that the most prominent problem of Taikoo W&W Area is the excessive pursuit of commercial profit in the renewal project, which led to the over-commercialization and privatization of waterfront landscape and industrial heritage, as well as the separative relationship with the city.

(5) Publicness as Renewal Strategy for Guangzhou Taikoo Warehouse & Wharf Area

Based on the theoretical research and site investigation above, this part puts forward the design position of the industrial heritage cultural block for the renewal of Guangzhou Taikoo W&W

Area under the guidance of principles of publicness. Moreover, four specific design strategies are made, which are protecting and continuing the value of industrial heritage, multi-level transportation system, mixed land use and soft spatial interface, verifying the feasibility of applying the concept of publicness to the renewal strategy of Guangzhou waterfront industrial heritage, and providing a certain referential value for future renewal activities of other waterfront industrial heritage in Guangzhou.

1.5 Research Method and Framework

1.5.1 Method

(1) Literature Review Method

By searching keywords such as publicness, urban waterfront renewal (redevelopment), waterfront industrial heritage, the author collected and read relevant domestic and foreign journals, dissertations, published bibliographies and other documents. After understanding the research status and trends in China and abroad, the direction of applying the concept of publicness in Guangzhou waterfront industrial heritage renewal is clarified, which lays the theoretical foundation for this paper. In addition, by consulting government documents and related research papers, the historical context and renewal status of the general Guangzhou waterfront industrial heritage and the Taikoo W&W Area are understood.

(2) Case Analysis Method

Through the collection of relevant academic articles, network reports and pictures on waterfront industrial heritage renewal practices with strong publicness in different regions, the implemental design strategies of publicness are summarized, serving as the realistic foundation for the following publicness guided renewal strategy of Guangzhou Taikoo W&W Area. In addition, through the analysis on Guangzhou waterfront industrial heritage renewal cases, an in-depth understanding of the overall status quo and deficiencies can be gained, concluding

common and individual issues and providing reasons for the selection of detailed design site.

(3) Field Research Method

Visiting the representative regenerated Guangzhou waterfront industrial heritage and observing the spatial characteristics and usage conditions of the site is helpful to obtain first-hand information on the current situation and supplement the insufficiency of literature. In the field research, the author focuses on observing and recording the heritage protection and utilization of Guangzhou's waterfront industrial heritage, the use of waterfront space, the relationship between the park and surrounding cities, and the environmental status of surrounding cities. Furthermore, the characteristics and the evaluation information of different user groups of Taikoo W&W Area were obtained through the distribution of questionnaires.

(4) Multidisciplinary Analysis Method

This paper sorts out and summarizes the research on urban waterfront renewal, waterfront industrial heritage renewal, and publicness concepts from the perspectives of politics, economy, society, and culture. In addition, the overall analysis on the comprehensive value and current deficiency of Guangzhou waterfront industrial heritage in the fields of urban space, history, society and culture, provides physical basis for the spatial renewal strategy for Taikoo W&W Area under the framework of publicness.

1.5.2 Framework

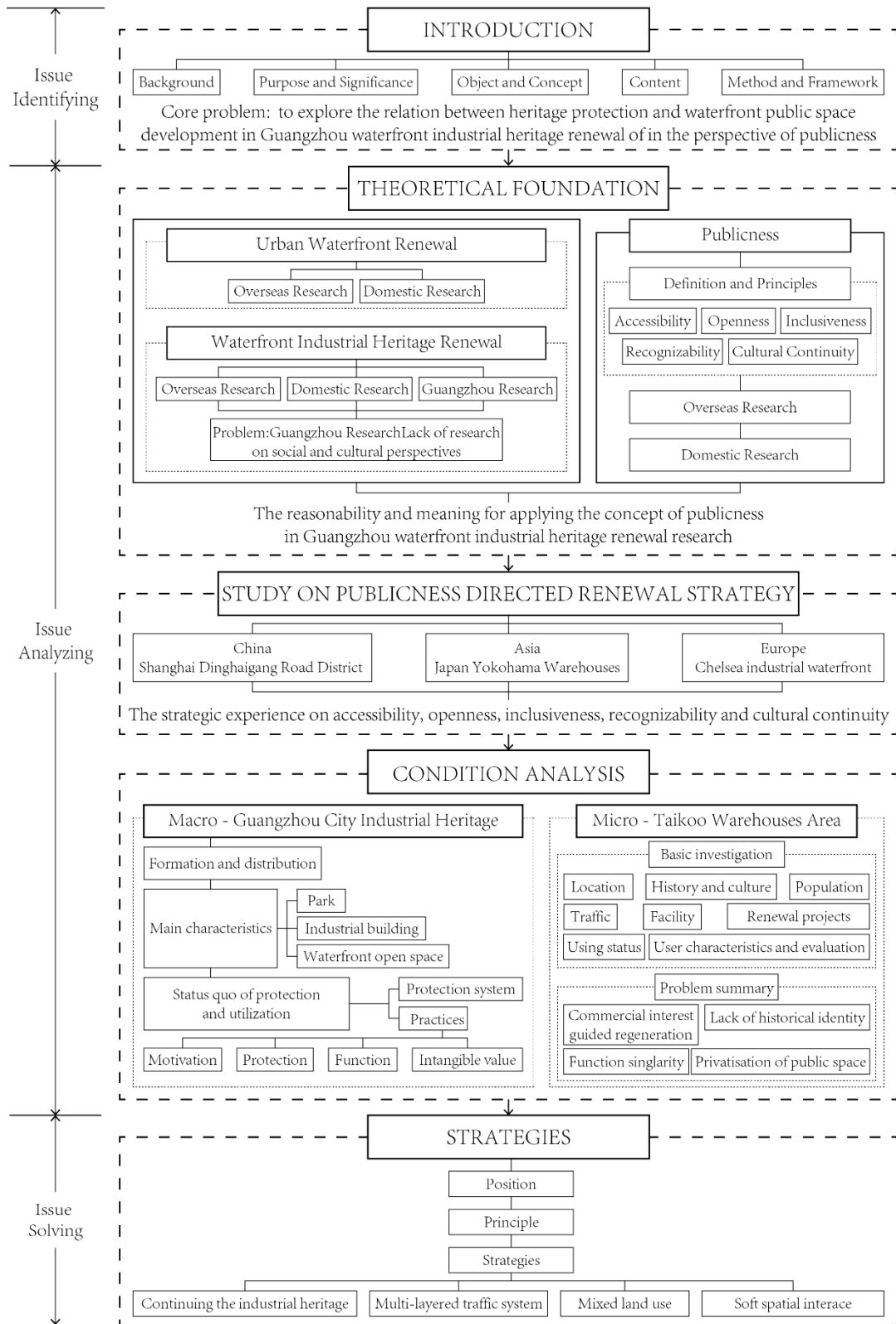


Fig 1-1 Research Framework (Source: drawn by the author)

Chapter 2 Theoretical Foundation

2.1 Research on Urban Waterfront Renewal

2.1.1 International Status of Research on Urban Waterfront Renewal

In the 1960s and 1970s, containerization, ports and the relocation of port-side industries led to the decline of productive waterfronts, and the conflict between port functions and the wider urban environment aroused discussions on the revival of waterfronts by people from all walks of life ^[3]. The process of waterfront redevelopment started in North America first, then spread to Europe and globally in the 1980s. The importance of waterfront space redevelopment to enhance the city's competitiveness and image has gradually emerged, and related theoretical research started increasing. The research field has extended from physical space to economic, social, and historical and cultural aspects, which fully reflects the high complexity of urban waterfront redevelopment phenomenon.

In terms of physical space, the environment of urban waterfronts has been severely damaged by industrial production activities, and most of them have become wasteland and brown areas, which has greatly hindered the development of waterfronts ^[4]. Hamilton pointed out that improving the quality of physical space and achieving the balance of the internal functional structure of the waterfront is one of the primary tasks of the redevelopment bodies ^[5]. The renewal mode based on the adjustment of land use functions includes internal renewal mode of utilizing some of the facilities as new functions or partially rebuilding the waterfront area, as well as the outward expansion mode of moving out the original land use function or converting undeveloped land into urban construction land. The representative cases of the two modes are the renewal of the Navy Pier on Granville Island, Canada, which is oriented towards community service, and the Baltimore Inner Harbor, which was transformed into a comprehensive recreational and commercial area ^[6]. Gospodini agrees that urban waterfront renewal is an opportunity to improve the spatial quality of the built environment and enhance the image of

the city ^[7].

On the economic level, under the background of slowing global economic growth and even falling into recession, the research on urban waterfront redevelopment in the 1980s focused on the promotion of waterfront development to the economy. Gravagnuolo believes that improving land value is the main goal of the redevelopment project at this stage ^[8]. With the transformation of European and American countries from the manufacturing economy to the information and service industry economy, the redevelopment of waterfront areas focusing on leisure, tourism, commerce, entertainment, catering, parks, and culture has gradually gained its popularity. Economic indicators such as social services, taxation, and jobs created by the project have also become one of the main criteria for evaluating the success of the project ^[9]. However, there are also many scholars who have questioned the actual effect of waterfront redevelopment on urban renewal. For example, Clark pointed out that there is a problem that developers' pursuit of short-term interests does not help the bottom people living near the waterfront. This indicates the subsequent more social thinking of scholars on the renewal of waterfront areas. ^[10]

At the social level, since the 1990s, researchers have reached a consensus on the importance of public space in urban waterfront areas, and even believe that public space is the main body of urban waterfront redevelopment. After summarizing the experience of New York, London, Boston and Toronto, Gordon pointed out that the urban waterfront public space provides public benefits that cannot be ignored, and proposed a series of space design strategies to improve the quality of urban waterfront public open space ^[11], where urban waterfront districts have become important carriers of civic activities. Shangi, Hasan, and Ahmad also agree that providing leisure and social activities beneficial to public health in the waterfront area is conducive to improving the social rationality and public vitality of the urban waterfront area. ^[12] As Richards and Palmer argue, city environment can be enhanced and revitalized by staging temporary events in public spaces. ^[13] The waterfront area is one of the most popular places for temporary events, including cultural festivals, concerts, exhibitions and competitions. ^[14] In terms of civic participation in the renewal process, active community organizations in

developed countries also have an important impact on the decision-making of urban waterfront redevelopment. Hoyle conducted an in-depth study on the social organizations of five representative port cities in Canada, and proposed community attitudes have become an important political factor in waterfront redevelopment. [15-18]

On the historical and cultural level, as Girard said, as the cultural value of historical relics such as warehouses, shipyards, and industrial buildings in urban waterfronts has gradually been recognized by the society in recent years, and UNESCO has also recognized many distinctive industrial ports as heritage sites. The protection-oriented model for waterfront areas redevelopment emerged in this stage, which puts forward higher requirements for policy innovation and flexibility in dealing with public-private interests and old-new relationships [19]. Chang proposed that preserving the authenticity of historic buildings and lifestyles along the waterfront helps build local identity [20]. Through the staged summary and analysis of the redevelopment of Liverpool's waterfront, Fageir proposed that the protection-oriented redevelopment strategy played an extremely significant role in shaping the urban cultural landscape [21].

2.1.2 Domestic Status of Research on Urban Waterfront Renewal

Compared with foreign countries, Chinese research on waterfront redevelopment started relatively late, and it was not until the 1990s that researches related to urban waterfront redevelopment gradually appeared in Chinese academic journals. Most of the literature was published between 2002 and 2014, and the number has gradually decreased in the past decade. In terms of content, the early literatures are mainly the analysis of foreign practical cases and the summary of methodologies, as well as the study of waterfront redevelopment models, functions, planning, strategies and impact analysis of individual cases at the material level, lacking of urban integrity. The functional research focuses on tourism, leisure and real estate development, which is relatively one-sided. In recent years, research directions have become more diverse, and research from new perspectives such as landscape, public policy, historical

protection and cultural integration has emerged, but there are problems of inadequate amount and insufficient research depth.



Fig 2-1 Year Distribution of Domestic Academic Articles on Waterfront Area Redevelopment
(Source: cnki.com)

In terms of learning from foreign cases, in 2001, Wang Jianguo and Lu Zhipeng proposed five issues worthy of attention in the practice of domestic waterfront redevelopment by discussing the background and internal motivation of the redevelopment of urban waterfronts worldwide, and analyzing the experience and lessons of the realized projects. In 2002, Zhang Tingwei et al. compiled the first book in China to discuss the design and development of waterfront areas comprehensively. Through multi-dimensional analysis on large number of practical cases of western waterfront area redevelopment in terms of physical space, economy, politics, etc., it provides important references for domestic waterfront development theoretically and practically.

On the material level, in 2002, Xu Ke proposed specific ideas and measures for the redevelopment of waterfront tourism functions, which provided important references for subsequent function-related studies and practices ^[22]. In 2005, Bao and Liu reflected on the renewal model of urban waterfront led by real estate from a forward-looking perspective and pointed out the absence of government role ^[23]. In 2006, Yun and Li proposed for the first time the functional positioning principles and reference opinions of urban waterfront functional transformation from the perspective of urban functional structure adjustment, and suggested that domestic research should define function and positioning from regional scale analysis ^[24].

In 2006, Lin and Fu proposed a targeted development model of sustainable development of waterfront area based on national conditions ^[25]. In 2010, Tai Xuedong and other scholars discussed the spatial form planning of waterfront development based on the design practice of Suqian City ^[26].

In other aspects of research, in 2005, Zhang Lan discussed the protection and reuse of urban waterfront natural landscape and historical landscape in specific waterfront planning practice, which is forward-looking ^[27]. In 2011, Yang Li took the redevelopment practice of creative park on the north bank of the Pu River in Shanghai as an example to make an in-depth discussion on the urban waterfront redevelopment planning model in line with the public interest ^[28]. In 2013, Da Ting took the renewal of the waterfront in Perth, Australia as the research object, and proposed the urban waterfront connection strategy in three dimensions of ecology, social function and context from a more comprehensive perspective ^[29]. In 2016, Chen Lin and other scholars analyzed and proposed suggestions on the redevelopment of the current urban waterfront space from an ecological perspective.

2.2 Research on Waterfront Industrial Heritage Renewal

2.2.1 International Status of Research on Waterfront Industrial Heritage Renewal

As an important part of the history and culture of the urban waterfront, the attention of foreign countries to the waterfront industry heritage originated from the renewal practice of the urban wharf industrial zone. With the improvement of the society's understanding of the intangible cultural value of industrial heritage, the design practice has gone through three stages: the early eradication reconstruction, the protection and utilization of a single building to the integration and systematic development of regional resources. Meanwhile, the relevant theoretical research has gradually expanded from the field of ecology and landscape to the planning, architecture-related material space, politics, economy and society. So far, the theory and system of renewal

of waterfront industry heritage in foreign countries have been relatively mature.

At the ecological and landscape level, brownfield restoration and industrial landscape shaping are the main research topics. In 1998, Sutherland Lyall analyzed the features of brownfield and conducted in-depth research on its landscape reconstruction in *Designing the New Landscape*.^[30] In 2001, Nail Kirkwood summarized technical strategies for ecological restoration of industrial abandoned land by studying a large number of cases, providing theoretical basis for shaping post-industrial landscape ^[31].

At the level of physical space, the research literature focuses on optimizing spatial quality and improving regional attractiveness. A large number of literatures interpret practical cases from the perspective of regional planning and design or single building reuse strategy. For example, in 2008, Lourse L proposed adaptive planning and reconstruction design strategies based on the characteristics of the old waterfront industrial zone, and demonstrated his strategies based on the renewal project for the old industrial zone built near the Arad River in Portugal ^[32]. In 2013, Shih took the renewal of Dockland Wharf Industrial Zone in Britain as an example and proposed that the renewal of the old waterfront industrial zone should make full use of the spatial attributes of the industrial heritage itself, integrate with the overall environment of the surrounding area, and properly deal with the waterfront space.^[33]

The research at the political level focuses on the comparative analysis of the development mechanisms and models of different types of renewal cases, and summarizes the advantages and disadvantages of different development methods to promote the perfection of renewal system. For example, in 2004, Brown studied the change of public power in waterfront renewal based on different cases, and expounded the transformation process of public power, especially port sovereignty, in the implementation of waterfront renewal ^[34]. In 2013, Luis Loures made a comparative study of six cases and proposed that the policy of heritage reuse should strike a balance between legislation and administration, and among citizens, institutions and the market ^[35].

Economic and social studies are interpenetrating with each other. In the past, waterfront

industrial heritage was regarded as a means to improve economic benefits. While in recent years, the balance of social and economic benefits has become the main goal. In 2014, Susan pointed out that economic interests overpower social interests and public participation is ignored in the renewal of Australian wharf heritage ^[36]. In 2019, Dutch scholar Marijn van de Weijer proposed that waterfront industrial heritage such as wharves has become a cultural hot spot in post-industrial society, and the renewal of functional configuration should be more diversified and at the same time strengthen the connection between waterfront industrial heritage and surrounding city communities, so as to respond to the complex and changing social needs ^[37].

2.2.2 Domestic Status of Research on Waterfront Industrial Heritage Renewal

The domestic research on the waterfront industry heritage renewal starts from the empirical study and research on the existing theories and practices in western countries. In recent years, with the comprehensive value of waterfront space gradually attracted more and more social attention, waterfront industrial heritage has become the research focus of many developers and researchers. Correspondingly, relative researches are increasing gradually and the research contents are becoming more comprehensive. Certain theoretical research achievement has been obtained and numerous waterfront industrial heritage renewal practices have been realized.

In the aspect of study of theories and practices of western countries, Liu Zheng paid special attention to the identity of industrial buildings as urban historical and cultural memory. By referring to foreign renewal cases, he proposed a sustainable development strategy of respecting industrial history and culture and giving consideration to both protection and reuse for the recognition and renewal of domestic industrial heritage ^[38]. Deng Yan studied and analyzed the historical development of Singapore River Area from the perspective of historical context protection, and summarized the reconstruction experience of the old waterfront industrial area from the aspects of planning strategy and architectural form ^[39]. By analyzing the renewal case

of Hamburg Port New City, Liu Yanchao summarized the sustainable renewal methods of industrial port zone from the aspects of function, culture and environment, providing experience and enlightenment for the port industrial zone renewal in China. Wang Na studied the renewal project of the Port of Houston in the United States that activated urban space and restored environmental ecology through landscape planning and design, providing valuable reference experience for domestic urban governance ^[40].

In the aspect of thought, concept and strategy exploration of waterfront industrial heritage renewal, scholars mainly focus on four aspects: spatial form, landscape, historical and cultural continuation and social comprehensive value.

In terms of spatial form, scholars focus more on how to realize the organic integration of waterfront industrial heritage into the city. From the perspective of integration thoughts, Fan Lijun proposed the renewal strategy of waterfront industrial heritage to establish the economic, ecological and cultural connection between wharf industrial heritage and city through the integration of spatial elements ^[41]. Taking the industrial heritage of the Beijing-Hangzhou Grand Canal corridor as an example, Chi Fangai discussed the relationship between waterfront industrial heritage and the city based on the concept of recycling and symbiosis, and carried out unified planning and collaborative development of urban waterfront industrial heritage in space, function and culture aspects from the level of symbiotic unit, symbiotic environment and symbiotic model ^[42].

For the purpose of shaping the post-industrial urban landscape, the research on the landscape environment of waterfront industrial heritage is mostly integrated with the research on the continuation of history and culture. Li Liping elaborated the relationship among historical context, industrial heritage and landscape design by studying the development and relevant theories of waterfront industrial heritage at home and abroad, and explored the specific expression of historical elements in landscape design by taking Yangshupu Power Plant renewal project as an example ^[43]. Zhu Yichen introduced the evolution of the reuse of waterfront industrial heritage from the role of material space to urban shared landscape, and discussed the sharing characteristic of urban landscape from five aspects of diachronic, permeability, time-

sharing, diversity and daily ^[44]. Taking the waterfront industrial zone in Yangjiang City as an example, Xu Youwen discussed the historical landscape value of the waterfront industrial heritage from the perspectives of landscape, city and architecture, and proposed the renewal strategy for the waterfront industrial heritage from the aspects of ecology, history, landscape and public participation ^[45].

In terms of social comprehensive value, most of the studies aim to revitalize urban public vitality through the renewal of waterfront industrial heritage. Taking Yangpu Waterfront Area as the research object, Zhang Qiang proposed comprehensive planning and design strategies from the aspects of historical context continuation, spatial quality and public service level improvement based on actual case study ^[46]. Zhang Ming and other scholars discussed the life, landscape and cultural service value of waterfront industrial heritage to the city and community in the theme salon on the transformation of urban waterfront industrial heritage corridor, and proposed that integrating public functions into heritage renewal can transform the waterfront area into a shared space for staying in the city and catalyze the development of the urban waterfront zone ^[47].

In terms of policies and regulations, scholars mainly focus on the government's responsibility to protect the publicity of waterfront space. Song Weixuan et al. believed that the lack of existing legal norms led to the gradual privatization of waterfront space redevelopment, and that government legislation and policy measures should support and protect the balance between economic and social comprehensive values in waterfront space development ^[48].

2.2.3 Guangzhou's Status of Research on Waterfront Industrial Heritage Renewal

On the whole, the research on the renewal of Guangzhou waterfront industrial heritage mainly focuses on the protection and utilization of industrial heritage, and there are few compound studies combining its waterfront characteristics. The research on industrial heritage in

Guangzhou is still confined to the material level, and the research on the non-material aspects such as society and culture is still insufficient. The current research content mainly includes the historical context sorting, policy system, protection and reuse mechanism, model and strategy, and landscape protection of Guangzhou industrial heritage, among which waterfront industrial heritage is usually mentioned as the survey object. In recent years, the composite research on Guangzhou waterfront industrial heritage has begun to increase. The type of literature is mainly master degree thesis, but the overall number is still small, the research objects are dispersive, the research topics are scattered, and the targeted research on waterfront industrial heritage has not formed a complete system.

In the aspect of sorting out the historical context of Guangzhou industrial heritage, scholars generally pay attention to the spatial characteristics of its distribution along the Pearl River. Wu Yongming first proposed the spatial characteristics of Guangzhou industrial heritage distribution along the Pearl River^[49]. Yang Honglie simply sorted out the contents and problems of Guangzhou's industrial cultural heritage. Combining with domestic and foreign industrial heritage protection experience, he proposed that in the renovation practice of Guangzhou, attention should be paid to the protection of the historical value of industrial heritage, to avoid overdevelopment of real estate^[50]. Jia Chao and Zheng Lipeng sorted out the historical context of Guangzhou's industrial development, and summarized the Lingnan characteristics of Guangzhou industrial heritage from aspects of society, nature and culture. Jia Chao further proposed in his doctoral thesis that the renewal of Guangzhou industrial heritage have problems such as repeated construction and excessive commercialization. He took Baietan area as an example to propose that the renewal of industrial heritage could be combined with riverside landscape for integral transformation. In addition, industrial heritage should be utilized to carry related cultural activities to respond to the needs of surrounding residents in terms of cultural life^[51-53]. Cao Xing proposed that Guangzhou industrial heritage has hydrophilicity in general, but he did not further study and analyze its waterfront value^[54].

In terms of government system and policy, Bao Jigang and Liu Xuemei first criticized the early Guangzhou waterfront renewal model dominated by real estate development and emphasized

that the government should take the responsibility of control in terms of conceptual understanding, system, laws and policies ^[23]. Fan Xiaojun and Xu Honggang pointed out that the policy of suppress the second industry and develop the third industry restricts the protection of industrial heritage, and proposed to incorporate measures of protection and reuse of industrial heritage into an institutionalized framework, so as to guarantee the sustainable development of industrial heritage with a long-term mechanism ^[55]. Liu Hui and Liu Huadong compared and analyzed the practices of different industrial heritage protection systems in Guangzhou, and proposed suggestions from four stages of investigation and evaluation, identity identification, protection planning formulation and activation utilization based on relevant cases ^[56].

In terms of the mechanism, mode and strategy of the protection and utilization of industrial heritage in Guangzhou, the research direction has undergone a transformation from the overall protection and reuse of industrial heritage in the early stage, to the transformation of the reconstruction mode of cultural creative park, and at last gradually diversified with the development of social consciousness. Lu Xiaohua reviewed the development of protection and reuse of industrial heritage in Guangzhou, summarized the problems faced, analyzed specific renewal cases in Guangzhou from reuse models and application techniques, and proposed relative strategies such as improving laws and mechanisms, improving design standards and enhancing public power ^[57]. Lin Yi proposed protection and reuse methodologies for industrial heritage buildings in Guangzhou, such as Purple Line Protection, value evaluation index system and graded protection, and demonstrated practical cases transformed under different modes ^[58]. Wang Jianjun and other scholars analyzed three different types of cases of Xinyi Guild Hall, the Redtory and Guangzhou Steel New Town from the aspects of heritage management, implementation body, operation mode and the relationship between heritage and city, and summarized the experience of industrial heritage protection and utilization implementation mode under the dominance of market mechanism, providing an important reference for urban planning management and system construction ^[59]. Through the case analysis of Guangzhou Redtory, Xie Dixiang and other scholars concluded that the cultural creative park mode of industrial heritage reuse should pay more attention to the protection of intangible values,

improve the publicity of cultural service functions, and regulate and improve the external environment of the park ^[60]. Zhang Yun took three well-known creative industry parks in Guangzhou as the research object, summarized the reasons for the phenomenon of singularity in the transformation mode of Guangzhou creative industry Park, and proposed optimization strategies such as preserving site attributes, experience strengthening, integrating site memory and reflecting localization ^[61]. Sun Zewen conducted on-site survey and comparative analysis on the industrial heritage creative industry park in Guangzhou and Beijing, and proposed targeted design strategies for public interaction space from the aspects of planning, space design and space atmosphere creation ^[62]. In recent years, the transformation direction of industrial heritage in Guangzhou have become more and more diversified. Based on the protection and reuse of Wuxianmen Power Plant, Li Xiaoxue and Fang Zhengyuan explored the design idea of preserving the authenticity of heritage in the mode of museum transformation ^[63]. Taking the reconstruction planning of Pearl River Brewery in Pazhou West District as an example, Lin Taizhi and Xu Yaokuan proposed specific reconstruction strategies for the protection and utilization of industrial heritage in CBD area, which were guided by conservation, to activate the industrial heritage and to strengthen the living characteristic of the place, and to establish connections with the surrounding open space ^[64]. Liu Weibing and Zhou Jiarong explored the possibility of industrial heritage renewal suitable for aging by taking the West Village Shimin Building in Guangzhou as an example ^[65]. In 2022, the kindergarten renovation practice of Chengzhitang Warehouse is a new breakthrough in the activation and renewal of Guangzhou's industrial heritage ^[66].

In the aspect of landscape protection, Di Rui carried out field research on the distribution status and reconstruction design of the abandoned industrial buildings in Guangzhou and put forward the common shortcomings. In addition, he proposed two renovative design suggestions for the abandoned industrial buildings in Guangzhou, which is retaining industrial surface traces and structures in the external environment for certain artistic treatment, and enriching the spatial effect through horizontal and vertical space division inside single building ^[67]. Zhang Yuqi proposed the protection and regeneration design strategy of Guangzhou industrial heritage

cultural landscape from four aspects of culture, aesthetics, ecology and landscape ^[68].

In the targeted research on Guangzhou waterfront industrial heritage, Chen Yiwei first investigated the spatial renewal status of Baietan waterfront industrial heritage parks from the perspective of landscape reconstruction, and pointed out the problems of single form and insufficient drive to surrounding social benefits ^[69]. In 2017, Zhang Hong sorted out the historical formation, development and renewal status of the old waterfront industrial zone in the central city of Guangzhou, and summarized the renewal trend of more diversified, organic and public ^[70]. In 2020, Li Ruojia investigated the practice of protection and renewal of industrial heritage along the back Channel of the Pearl River in Guangzhou, and proposed the index and evaluation framework of influencing factors of public space vitality after the renewal of waterfront industrial heritage. Combined with the evaluation results, she tried to put forward improvement suggestions from four aspects of spatial organization, function setting, spatial interface and public facility. However, problems such as insufficient systematization of strategies and less attention to industrial heritage still exist ^[71]. In 2021, Gao Kunze introduced the perspective of daily life into the research on the renewal of Guangzhou waterfront industrial heritage and pointed out the problem of lack of attention to life scenes in the existing renewal through field research. Combined with similar cases at home and abroad, he proposed the strategy of daily construction for public space in the renewal of Guangzhou waterfront industry heritage, but the strategy has the deficiency of lack of awareness of industrial culture protection ^[72]. In the same year, Fu Shiyun systematically sorted out and studied the formation and distribution of warehouse industrial heritage in Guangzhou, which is of high academic value ^[73]. In 2022, Wu Peixuan investigated and analyzed the evaluation on the use of open space in the old waterfront industrial zone of Guangzhou, and proposed three comprehensive strategies for the renewal of open space, including in-depth exploration and utilization of site cultural characteristics, integration of waterfront water resources and strengthening equipment construction ^[74].

2.3 Research on the Concept of Publicness

2.3.1 Definition and Principles of Publicness

(1) Definition

The word ‘publicness’ is explained as ‘the state of being public or being owned by the public’ in the Collins English Dictionary. Publicness is used to describe the openness or public right of something. Etymologically, the word "public" comes from the public sphere theory of political science and is used to describe the extent to which the political discussion space allows free discussion. Later, the concept of publicity was introduced into the field of urban design and used to describe the force of material space on social interaction. The strength of spatial publicity depends on the quality of public life.

(2) Principles

Based on the definition of publicity in the field of urban design, the integrity of public life in a space is mainly affected by four elements: the possibility of space access, the openness of space interface, the tolerance of space to different people and activities, and the recognition of space. In addition, making full use of the historical and cultural value of space can effectively improve the quality of public life. Therefore, it can be defined that accessibility, openness, inclusiveness, recognizability and cultural continuity are the five basic dimensions of publicness of space.

2.3.2 International Status of Research on the Concept of Publicness

Due to the profound and rapid reconstruction of urban space in western countries led by the United States after World War II, the trend of suburbanization leads to the unprecedented expansion and decentralization of urban space, the hollowing out of urban areas, and the spatial isolation of different social strata, and finally the rapid decline of urban centers. Foreign

research on the concept of publicness has developed from the field of political philosophy to fields of sociology and urban design. Urban public space is regarded as one of the important means of urban renewal. Western scholars mainly made effort on the definition of publicness, the design methodology of public space and the evaluation system of spatial publicness. In general, the exploration is relatively complete.

In the field of political philosophy, the public sphere and public political life are the main objects of discussion. Arendt first proposed the term public space and traced the formation of public realm back to the open democratic political debate in the polis of ancient Greece. She believes that the public sphere is a pure space for political discussion shared by the public, free from the influence of authoritative political consciousness and economic factors ^[75]. Oskar and Kluge argue that the public sphere is not the discourse expression of a single social class, and that the debate needs more voices from different groups to form together. ^[76] Habermas believes that publicness mainly plays the function of comment ^[77], and the nature of the public sphere in society should be neutral, open to all the public and capable of generating dialogue.

In the field of social and urban studies, scholars are engaged in heated discussions around the definition and design methodology of public space. Jane Jacobs attacked for the first time the destruction of the vitality of traditional city streets by the urban construction mode based on Functionalism. She advocated the construction of diverse and inclusive urban public space to promote the communication between different social strata or groups. Such urban space form should be mixed-function, heterogeneous and has certain density. ^[78] Kevin Lynch proposed the idea that the ownership of public space should be separated from the use right of the space. He believed that private space can also become public space ^[79], and discussed in depth the practical factors affecting the publicity of public space, such as space accessibility, equity, control, stimulation and social contact ^[80]. Social and political scholars Benn et al. further pointed out that the discussion of public issues inevitably involves three aspects of access, agency and interest. Accessibility is the right to approach and access, agency refers to the value orientation of managers and interest means who it ultimately serves. ^[81] Sociologist L. Lofland pointed out that accessibility is a prerequisite for public space, which is the area of the city

where all people can legally enter and where strangers meet.^[82] Through field research and other methods, Gehl analyzed the interactive modes of people in urban public space, and summarized the design paradigm for creating outdoor public space that can attract people to stay.^[83] Carr et al. defined public space as an open, public and accessible space for individual or group activities. The spatial accessibility is summarized into three aspects of physical access, visual access and symbolic access.^[84] Madanipour defines public space as a space provided by public institutions, open to and serving the whole public, and shared and used by all members of the society.^[85] In the inclusive and democratic society described by Iris Marion Young, connectivity, inclusiveness, and tolerance of difference are the core dimensions of publicness.^[86] Stephane Tonnellat, a French sociologist, through dialectical thinking on the analysis of various spatial forms in French and American cities, came to the conclusion that public space must be both accessible and communicative.^[87] Whyte proposed that a successful public space should have four key qualities, which are spatial accessibility, people participation in various activities, space with comfort and good image, and the ease for people to interact with each other and increase social interaction.^[88] Matthew Carmona proposed that the determinants of public space are social function, crowd concept and space ownership.^[89]

In terms of the evaluation system of spatial publicity, Van Melik et al. put forward two evaluation models from the perspective of spatial political economy. The Secured Space Model is related to security perception and the Themed Space Model is related to urban entertainment^[90]. Although the dimensions are relatively limited, it is quite creative in the reembodyment of abstract concepts. In 2010, Varna and Steve proposed a STAR Model for quantifying spatial publicness from five dimensions of ownership, control, civility, physical configuration and animation.^[91] This model was used to evaluate several urban waterfront spaces of similar size and type in Scotland and northern Europe to explore the similarities and differences in spatial vitality and usage.

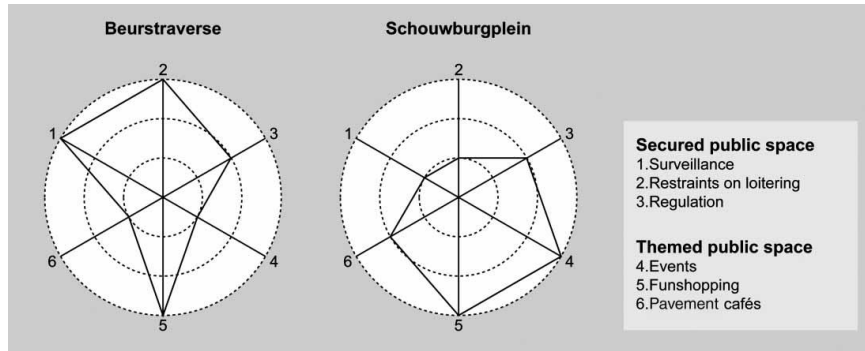


Fig 2-2 Six-dimensional Profiles of the Beurstraverse and Schouwburgplein as Secured or Themed Public Space (Source: Fear and Fantasy in the Public Domain: The Development of Secured and Themed Urban Space)

In general, during the formation and development of the concept of publicness, scholars in the field of political philosophy focused on the spontaneity, diversity and openness of public activities. Although there was no emphasis on the material form accommodating the public sphere, it should be a public platform for different people to gather and communicate. However, scholars in the field of urban and social studies focus on the role of urban public space in accommodating and promoting the interaction between social classes. The nature, ownership and properties of public space have all been fully studied and discussed. Based on the conclusion of scholars at this stage, the author believes that the four basic dimensions of the publicity of urban material space can be summarized as accessibility, openness, inclusiveness and recognizability.

Tab 2-1 Basic Principles of Publicness (Source: by author)

Principle	Scholar	Related Description
Space ownership	Benn and Gaus	Interest of agency; it depends on the value orientation and space of the manager ultimately serve for who
	Madanipour	a space provided by public institutions
	Margaret Kohn	Ownership

	Matthew Carmona	Spatial ownership
Accessibility	Kevin Lynch	Spatial accessibility
	L. Lofland	Accessibility is a prerequisite for public space
	Benn and Gaus	Accessibility
	Carr	Physical access
	Iris Marion Young	Connectivity
	Margaret Kohn	Connectivity
	Stephane Tonnelat	Enterable
Openness	Kevin Lynch	Public use space; spatial control
	L. Lofland	Everyone has legal access
	Gehl	Outdoor space
	Carr	Open and accessible
	Madanipour	Open to all
	Stephane Tonnelat	Enterable
Inclusiveness	Sennett	Social interaction between people in society who would never meet each other
	Kevin Lynch	Equity and social contact
	Carr	Individual or group activity space; Democratic and responsive
	Madanipour	Shared and used by all members of society
	Iris Marion Young	Tolerance; tolerance of differences
	Margaret Kohn	inter-subjectivity
	Stephane Tonnelat	Available for communication
	Matthew Carmona	Social function
Recognizability	Gehl	Attractive for people to stay
	Carr	meaningful, visual access, symbolic access
	Matthew Carmona	Crowd concept

2.3.3 Domestic Status of Research on the Concept of Publicness

In contrast, the domestic research on the concept of spatial publicness started relatively late and

did not emerge until the late 1990s. In the early stage, it was mainly theoretical research based on the existing theories and practical achievements in the West, while later research focused on exploring the analysis and strategic practice of the concept of publicness in different types of urban space. It is worth mentioning that the mutual promotion between spatial publicness and urban cultural transmission is supplemented through theoretical research and practices.

In the study of the existing theories and practices of western countries, Xia Zhujiu, a scholar from Taiwan, first outlined four understandings of publicness in his book *Public Space*. It is proposed that public space is a common space defined by political process and required by social life under established power relations^[92]. Yu Lei's *A Study on the Publicness of Space* is the first systematic study on the publicness theory in mainland. The book gives personal definition of the concept of publicness and spatial publicness, and makes a comparative study on the similarities and differences between China and the West in the development of publicness^[93]. Ye Min and Chen Zhu made a comprehensive and systematic review of the literature on public space and publicness concept of western city-related disciplines, and concluded the main factors in determining the publicness value of western urban public space, whose main research perspectives and theories are analyzed as well^[94 95]. Long Yuan investigated the three main meanings of the word "Public" and put forward the three levels of publicness of the state, society and citizens, and then discussed the relationship among the three, emphasizing the difference in the connotation of publicness^[96]. From the perspective of man-land relationship, Zhang Chen et al. established a theoretical framework of urban space publicness covering three dimensions of urban space influence mechanism, external representation and public perception^[97].

In terms of the application of the concept of publicness to design practice, Wang Lumin and Ma Lu Yang analyzed how the publicness of urban public space system reflects the spiritual standard of the city life from the side, and pointed out that more attention should be paid to the reasonable expression and realization of the publicness of public space in urban planning and construction^[98]. Chen Yu evaluated and analyzed the publicness of the transition space of eight cultural buildings, including Shanghai Theater, Shanghai Art Museum and Shanghai Museum, from the level of tangible elements and intangible elements (human activities) of space, and

finally gave a comprehensive evaluation on the publicness of the space ^[99]. Li Guanghao and other scholars reflected on the phenomenon of lack of publicness in the development of Chinese waterfront public space, discussed the public value concept of the development of waterfront public space, and on this basis proposed the principles and countermeasures for it. Wang Mingjie constructed the theory of publicness of cultural architecture in the Chinese context based on the basic theoretical research and era background research, and then critically reflected on the current situation of Chinese cultural architecture design from the perspective of publicness concept, concluded realistic problems, and finally proposed solutions ^[100]. While Lin Guangzhen, Lu Qi and Liu Guanping investigated the public characteristics of Lingnan State Garden from aspects of governance and use ^[101].

2.4 Research Review

To sum up, foreign scholars started earlier in the theoretical research and practice in fields of urban waterfront redevelopment and waterfront industrial heritage, and have gained more comprehensive and mature theoretical achievements and richer practical experience so far. In contrast, the domestic research started late, and the urban waterfront redevelopment research only concentrated on the material level. The current understanding of the social, cultural and historical value of the waterfront is still shallow. In terms of the research on waterfront industrial heritage, domestic theories are diversified, but Guangzhou, as a city with abundant waterfront industrial heritage, has one-sided research angle on waterfront industrial heritage, and the research on industrial heritage and waterfront space are separated. The research on the protection and reuse of industrial heritage only remains in the material level, the renewal practice mode is relatively simple, and the research from the social perspective is still very short. Moreover, studies on waterfront space lack attention to cultural heritage.

The concept of publicness is a spatial concept put forward by western scholars in the field of urban space and society in order to solve the problems of hollowing out, commercialization,

privatization and social differentiation of urban space. Through the in-depth research of contemporary scholars in specific design strategies and evaluation of space publicness, the concept of publicness has a strong guiding significance for the design practice of various types of space. In the process of domestic localization, the application value of the concept of publicness in urban public space, waterfront space and cultural space has been verified respectively.

Therefore, the theoretical innovation of this paper is to introduce the publicness perspective into the research on the renewal strategy of Guangzhou waterfront industrial heritage, comprehensively consider the composite characteristics of its waterfront spatial nature and industrial history and culture, and the dual identity of cultural heritage and urban public space, supplementing the theoretical research on the renewal of Guangzhou waterfront industrial heritage from the perspective of society and history and culture. Secondly, by exploring the application of the concept of publicness in the renewal of waterfront industrial heritage to broaden the scope of application of the concept of publicness.

Chapter 3 Study on Publicness Oriented Renewal Strategy for Waterfront Industrial Heritage

3.1 Case Selection Standard

Based on the research direction of publicness guided Guangzhou waterfront industrial heritage renewal strategy determined above, since the heritage in Guangzhou is mostly located in urban areas with a certain residential density, this chapter will select and analyze typical cases with similar environmental conditions from regions of China, Asia and Europe respectively, which improve the publicness of waterfront industrial heritage by different methods, so as to provide a more comprehensive reference for the renewal of Guangzhou waterfront industrial heritage.

Therefore, the author selects three cases: the public service oriented renewal of Yangpu River Dinghaigang Road District in Shanghai, the social activity oriented renewal of Yokohama Red Brick Warehouse Area in Japan, and the residential community oriented renewal of Chelsea Waterfront Old Industrial Zone in London. In-depth research and comparative analysis are conducted on five basic dimensions of publicness, namely accessibility, openness, inclusiveness, recognizability and cultural continuity, further clarifies the guiding significance of the concept of publicness for the formulation of renewal strategy of waterfront industrial heritage, and also provides an empirical reference for the renewal strategy for typical case of Guangzhou waterfront industrial heritage.

3.2 Public Service Oriented Renewal: Yangpu River Dinghaigang Road Area, Shanghai

(1) Project Background

Yangpu waterfront area is located between the inner and outer rings of the central city of

Shanghai, with an area of about 15km². In history, Yangpu waterfront area was once the cradle of Shanghai modern industry and one of the largest industrial bases in China. In recent years, with the adjustment of urban industrial structure, large industrial land along the riverside began to decline.

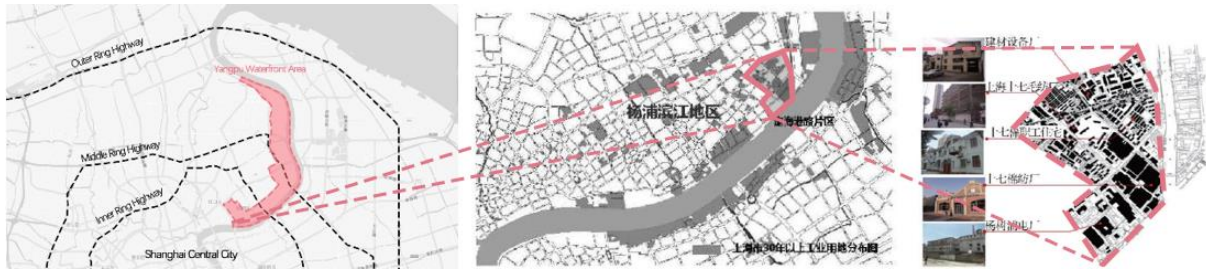


Fig 3-1 Position of Dinghaigang Road District (Source: redrawn by author)

Dinghaigang Road area is located in the east of Yangpu waterfront area, which is a representative area among industrial blocks. It has rich industrial heritage, distinctive street space and long bank line. The riverside bank line has Yangshupu power plant, the Seventeenth Cotton Mill and other large factories. It is connected with other waterfront area by the inner road of Pingliang Road. Before the transformation, the street space is narrow, and there are dense residential areas on both sides. Shanghai Building Materials Equipment Factory, Shanghai Tarnish Factory and other industrial plants are located around. With the rapid development of the city, after most of the factories in Dinghaigang Road area stopped production and were abandoned, the urban texture gradually became disconnected from the peripheral cities. Meanwhile, the internal living environment continued to deteriorate, and the street space became chaotic, which became a negative area in the city.

(2) Design Positioning

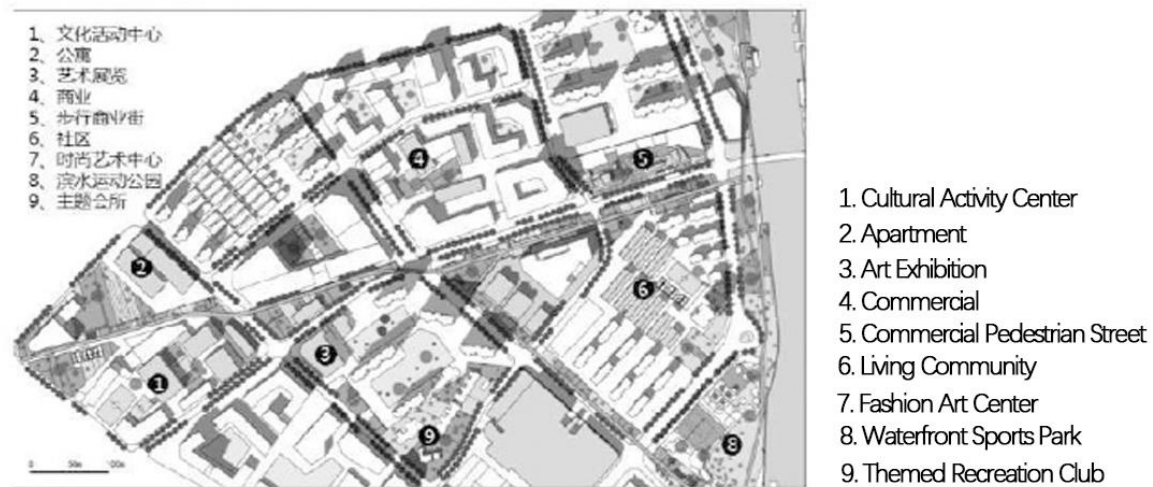


Fig 3-2 Master Plan of Dinghaigang Road District Renewal (Source: redrawn by author)

According to the spatial distribution characteristics of industrial heritage in the area, the site is divided into two areas of waterfront district and abdomen district. The large factories in waterfront area are transformed into public cultural space such as heritage park, cultural expo, creative scientific research center, while the abdomen district integrates the industrial heritage with the residential community to build small-scale block spaces, where cultural activity center, youth apartment, commercial pedestrian street and other urban life functions are put into industrial heritages.

(3) Design Strategy

Accessibility

The scheme aims to improve the accessibility of the site by enhancing the connectivity of the site deep into the inner urban area and along the river with the surrounding districts. In the direction of connecting the riverside and the inner urban area, the design is based on the urban texture of the waterfront industrial heritage block. Slow traffic system composed of continuous pedestrian, bicycle lane and linear park are designed to connect the industrial heritage area with

interior of the city are opened according to the service schedule of the internal functions. The opening hours of the site are diversified.

In terms of space interface, the design weakens the sense of isolation between land and water at two levels of circulation and sight by enriching the form of waterfront belt and the setting of greenery. However, the waterfront open space is blocked from the city by a wide administrative road, which reflects the lack of consideration in the design scheme.

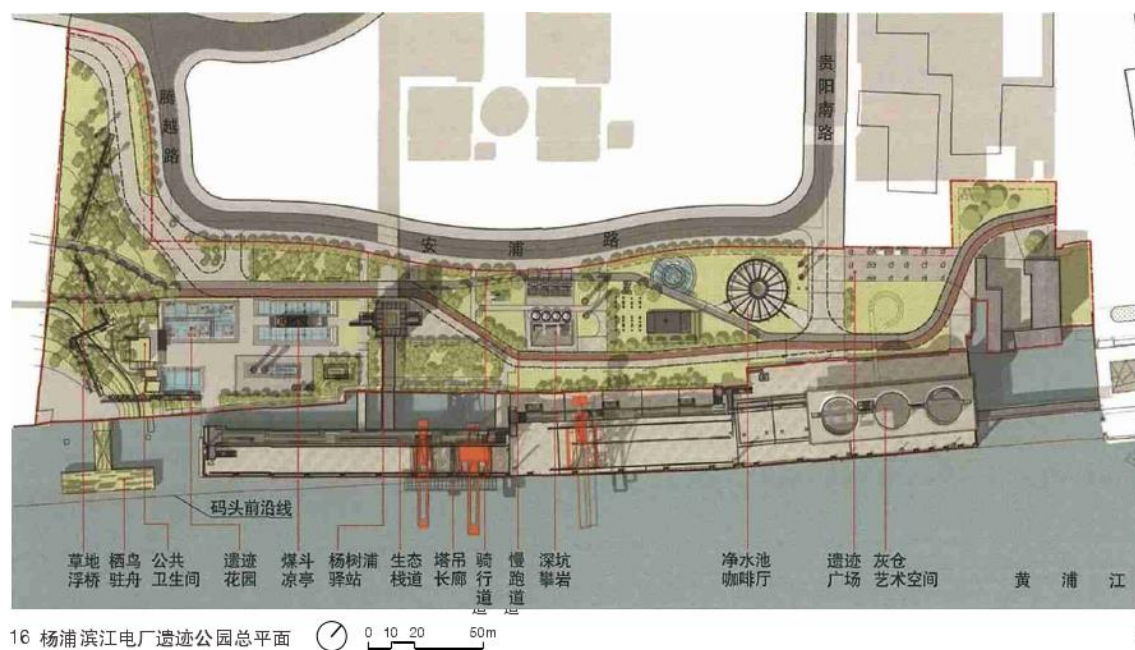


Fig 3-5 Master Plan of Yangpu River Power Plant Renewal (Source: Bibliography^[102])

Inclusiveness

The inclusiveness of the design scheme is mainly reflected in two aspects: the mixed setting of functions for different types of people and the design of the rest infrastructure system.

The publicness of functions in the site gradually weakens from the waterfront area to the hinterland area, so as to meet the needs of different users. The industrial heritage and waterfront space of riverside Heritage Park serve all citizens, while the closer the industrial heritage is to the inner city, the more it serves daily life. From commercial pedestrian streets, art exhibitions to cultural activity centers and residential communities, residents' daily life needs are also responded here.

In the Yangpu Waterfront Power Plant Relic Park, activities suitable for people of different ages, such as rock climbing, relic garden, coal bucket pavilion, clean pool cafe and gray warehouse art space, are set up in combination with the remaining industrial structure. In the riverside area, a variety of interactive experiences with water are distributed, such as bird habitats, ecological trestles, tower crane promenades and art spaces. It not only provides ample outdoor activity space for surrounding residents, but also provides diverse industrial cultural experience for citizens and tourists arriving from outside.

In addition, the People House set up in the waterfront area is a post providing rest, daily services and medical assistance to citizens to respond to the special needs of different social groups.



Fig 3-6 Rock Climbing, Relic Garden and the Coal Bucket Pavilion in the Relic Park (Source:

Bibliography^[103])



Fig 3-7 Photo and Diagram of People House Installation (Source: Bibliography^[103])

Recognizability

The renewal project of Dinghaigang Road Area has strong recognizability in both the overall scheme and the functional level. In terms of the overall identity of the site, the designer

preserves and highlights the appearance of industrial heritage to achieve the site's recognition in the urban landscape. On the functional level, the area fully informs users of the potential functions of different spaces and accurately conveys the design intention through the design that attracts people's attention, such as paving, seats, gallery racks and green plants. At the same time, a certain area of open space is reserved for other possible activities to take place.

Cultural Continuity

The preservation and continuation of the industrial history of the district is mainly reflected in four scales of landscape, block, architecture and urban furniture. On the landscape scale, chimney and warehouse structures with a certain height are preserved, and the constructable height of peripheral buildings is controlled to promote the organic integration between historical industrial scene and modern urban landscape. On the block scale, by repairing and retaining the appearance of the industrial heritage, and controlling the plan of the peripheral buildings, the original urban texture and spatial pattern are continued to ensure the integrity of the inner space system and industrial landscape of the block. On the architectural scale, the authenticity of the heritage is protected through the renovation of the internal structure, and the integration with the original structure is fully considered in the new functional scheme, such as the combination of barrel warehouse and art space. On the scale of urban furniture, elements with inherent characteristics of the park are extracted from the original industrial structure and translated into modern urban furniture design. While constructing modern industrial aesthetics, it maintains the connection with the existing environment, so as to achieve the organic combination of old and new. For example, the design of the balustrades and lamp posts in the site is derived from the state of the pipes in the old factory. Through the combination and variation of the single element of the water pipe, the balustrade and lamp post adapted to different lines and positions are formed. ^[103]



a) the exterior and the interior of water reservoir café b) the Pipe handrail and lamppost

Fig 3-8 Photo of Reuse of Historical Elements (Source: Bibliography ^[104]^[103])

3.3 Social Activity Oriented Renewal: Yokohama Red Brick Warehouse Area, Japan

(1) Project Background

The Yokohama Red Brick Warehouse is located in the Shinport, Naka-ku, Yokohama City, Kanagawa Prefecture, Japan. Awarded as the modernization heritage in 2007, it is an important historical building and place that witnessed the development of Yokohama Port. In 1889, when the Meiji government made great effort to build modern port facilities in Yokohama, the red brick warehouse was one of the most advanced storage buildings in Japan. After nearly 100 years of operation, with the development and changes of the urban area, the red brick warehouse in Yokohama gradually lost its original storage function and was closed in 1989.

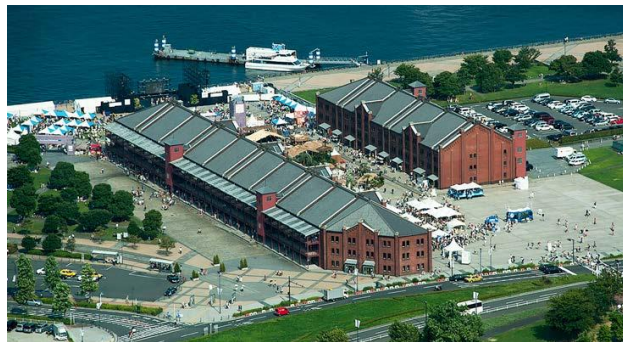


Fig 3-9 General View of the Red Brick Warehouse (Source: Bibliography ^[105])

(2) Design Positioning

The renewal of Yokohama Red Brick Warehouse was originally proposed as a key part of the *Yokohama Port Future 21st Century Plan*, which is a plan to renovate the decayed port area by introducing modern functions of office, business and culture. Due to its special location and value of historical relics, Yokohama Red Brick Warehouse is planned as a historical landscape node of port cultural exhibition, and its function positioning is a cultural and commercial complex with international universality.

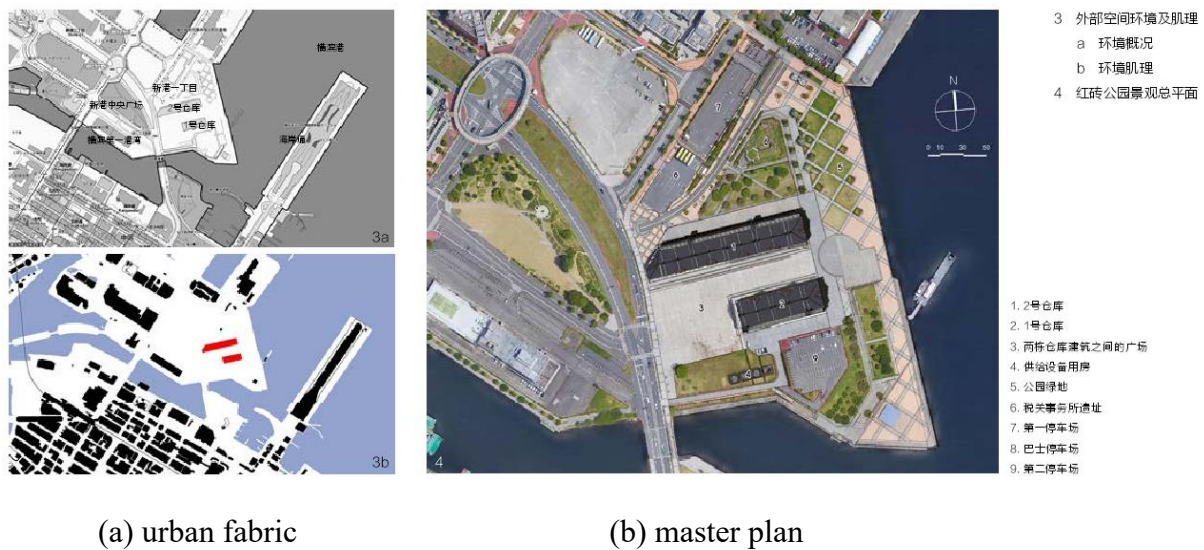


Fig 3-10 Urban Fabric and Master Plan of the Red Brick Warehouse Area (Source: Bibliography^[105])

(3) Design Strategy

Accessibility

The design scheme relies on a well-developed motorized transportation system, complemented by water transportation, as a strategy to improve the external accessibility of the site. The motorized transportation system consists of wide motorways and three parking lots around the Red Brick Park, providing comfortable road connections and ample parking space for people arrive with private cars and buses. The auxiliary water traffic further enriches the traffic connection between the site and the city, giving citizens a more interesting traffic experience.

In terms of improving the internal accessibility of the site, the multi-directional pedestrian paths based on geometric shape of the Red Brick Park provide a variety of free walking experiences across the site and to any location, improving the connectivity and accessibility of the waterfront open space and industrial architectural heritage. A fly in the road is the small number of entrances of the two red brick warehouses, leading to the weak connection with the open space.

Openness

In terms of space interface control, the interface design of waterfront open space and industrial heritage buildings in this case is worth referring to. The Red Brick Park makes full use of the morphological characteristics of the waterfront open space. By setting a large area of low green space, it tries to maintain the open view of the sea while creating an urban activity space fully integrated with nature. In the design of the external interface of the red brick warehouses, the case establishes the communication between the interior and the exterior of the building through the social activities held in the square between the warehouses and the semi-open corridor and windows on the architectural interface for people to stay and watch the activities. In addition, the space partition inside the warehouse also has the characteristics of flexibility and openness. For example, the open arrangement of commercial stores in the Warehouse No. 2 promotes the penetration and interaction between different types of commercial spaces, creating a richer and more interesting creation atmosphere and fashion sense.



a) semi-open corridor b) open interface of the commercial store c) glass staircase

Fig 3-11 Photo of Open Spatial Interface (Source: Bibliography ^[105])

In terms of time control, the overall opening time of the site is relatively long. The Red brick Park on the waterfront is open to the public all day, and the No.1 Warehouse, which is mainly used for cultural exhibition and communication, has relatively free opening hours and lively theater activities at night.

Inclusiveness

The inclusiveness of this project is reflected in the diverse architectural and landscape function arrangement.

On the level of architectural function, the transformation of the warehouses meets the needs of social activities of different scales and people with various functional types and spatial scales. Among them, Warehouse No.1 is transformed into a cultural exhibition and communication space that can accommodate large-scale public activities: the first floor is an open commercial space selling cultural communication commodities such as specialty products and souvenirs; On the second floor, there are three multi-function halls equipped with movable display boards and lamps, which can be used as art exhibition and conference space; on the third floor, there is a 300-person hall that can accommodate performances, film screenings and parties, as well as a matching lounge. The floor of the hall can be raised or lowered to accommodate different activities. Warehouse No.2 contains small-scale catering and retail functions: the first floor is for casual catering and small commodity retail, the second floor is mainly for various types of retail stores, and the third floor is equipped with a large restaurant where a semi-outdoor dining area is set up in the outer corridor to enrich the dining experience.



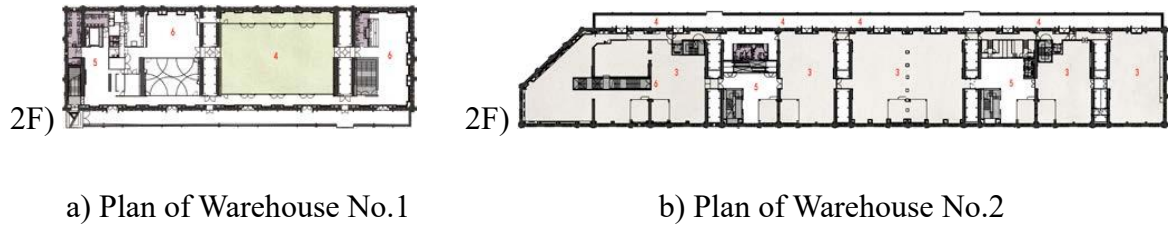


Fig 3-12 Red Brick Warehouse Plans (Source: Bibliography ^[105])

Considering on the landscape functions, the outdoor park and square space provide ample space for a variety of social activities. The open square in front of Warehouse No.1 is the site of many major events in Yokohama, such as the Yokohama Dance Festival, the ArtRink in Yokohama Red Brick Warehouse activity, which call on artists and snow lovers to create together, and Flower Garden activity. It attracts people from all walks of life to participate and promotes communication among them, effectively improving the quality of public life in the site.



Fig 3-13 Social Activities in Red Brick Warehouse Area (Source: Bibliography^[106])

Recognizability

The recognition of the site function is mainly reflected in the paving design of the outdoor space. In the form of paved floor, the waterfront space shows its more natural and open space atmosphere through the design of diagonal elements with an angle to the warehouse building, while the warehouse area shows its spatial potential as a complete space for holding activities through the uniformly colored pavement. In addition, scattered industrial elements such as stone roads, rails and red brick piers are embedded in the paving, suggesting the rich cultural content of the site.



Fig 3-14 Pavement Design in Red Brick Warehouse Area (Source: Bibliography ^[105])

Cultural Continuity

The historical continuity of the Yokohama warehouse renewal project is mainly reflected in the preservation and restoration of the red brick warehouse, the interaction between the new function and the history, and the design of the landscape elements of the open space.

The preservation and repair work of the warehouse buildings adheres to the principle of original state protection, through the protection of architectural form features from the whole to the details, to achieve a systematic continuation. Work carried out in the late 1990s included the repair of broken parts of the building, the renovation of the red brick wall and roof of the exterior, and the preservation and restoration of the historic structures of the interior. Most of the original components and materials of the building, such as steel, brick, tile, corrugated ceiling, lightning rod, fire doors, stairwells and elevators, are integrated into the new façade system of the building as historical hints after repair. Some components are directly placed on the main road of the inner commercial space as exhibition objects, preserving the historical memory and metaphorizing the historical and cultural connotation of the space at the same time.



a) South façade of Warehouse No.2



b) Section of Warehouse No.1



c) Section of Warehouse No.2



d) transformed old stair for cargo



e) exposed structure in the hall in Warehouse No.1

Fig 3-15 Cultural Continuity Reflected in Preservation and Transformation of the Warehouses

(Source: Bibliography ^[105])

As for the design of landscape elements, the project integrates greenery and pavement in the surrounding open space of the industrial building heritage, transforming it into the Red Brick Park. The open, horizontal green space design sets off the two warehouse buildings as the core of the environmental space, highlighting the importance of industrial history in this plot. On the scale of urban furniture, the park preserves traces of industrialization rich in historical and

cultural charm, such as stone road, old port station platform, freight rail and customs office ruins, achieving a harmonious integration between industrial landscape and natural landscape.

[105 106]

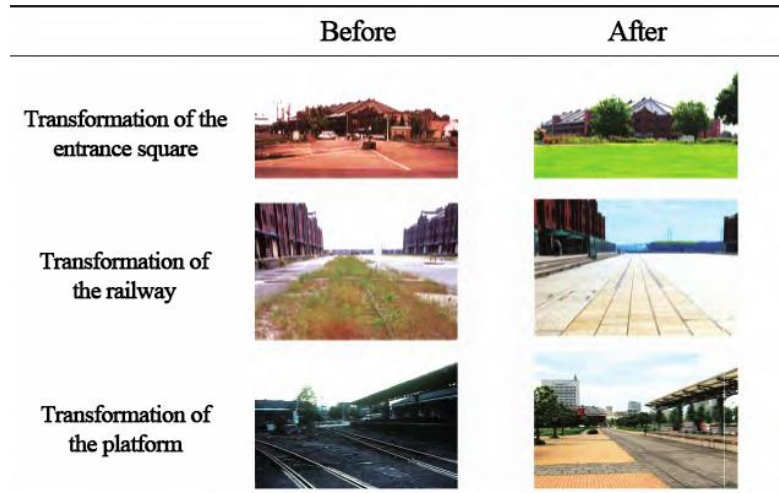


Fig 3-16 Preservation of Industrial Traces in Open Space Design (Source: redraw by author based on Bibliography^[106])

3.4 Residential Community Oriented Renewal: Chelsea Old Industrial Waterfront Area, London

(1) Project Background

As a vibrant metropolis, London is always looking for a sustainable growth space for the city future. Over the past few decades, London has been exploring a new model of urban growth in the post-industrial era to adapt to the future growth needs of housing, office space, leisure and service facilities. The exploration of the principle and method of mixed redevelopment of old industrial land has always been an important issue in British urban planning. In the past concept, the redevelopment of old industrial land must maintain a certain industrial employment index in the area, so the planning must include some productive land. However, now the British Local Planning Authority believes that providing more housing in the rapidly developing areas can attract more skilled workers and better support the economic growth of the whole city of

London. Under the new concept, the redevelopment strategy of the old industrial plots is transformed to the housing oriented mixed development model.

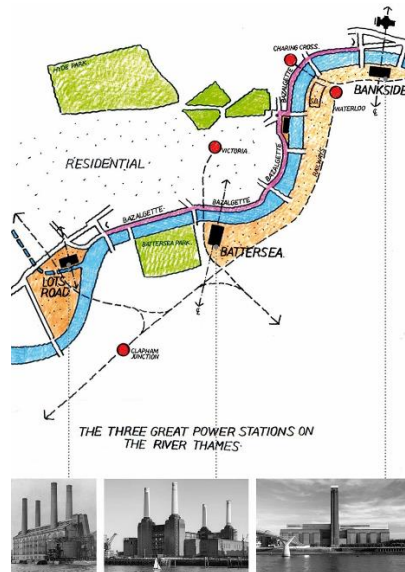


Fig 3-17 Three Power Plants along the Thames River (Source:

<https://www.gooood.cn/redevelopment-of-chelsea-waterfront-farrells.htm>)

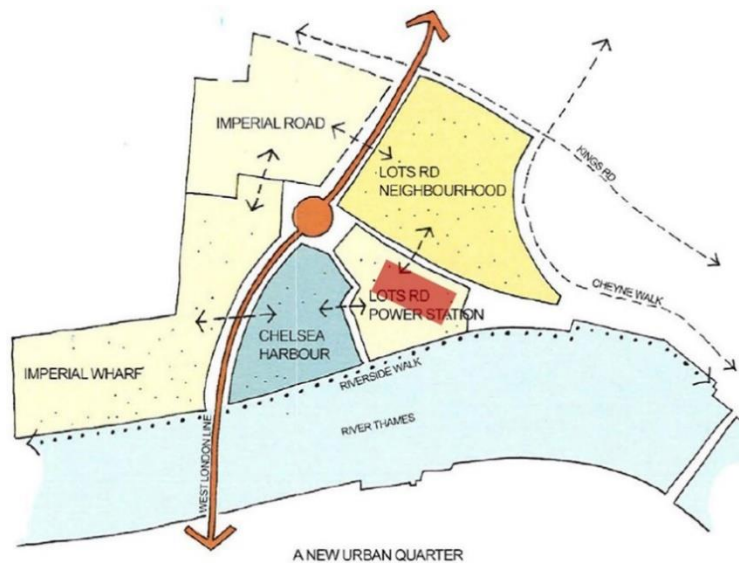


Fig 3-18 the Permeating Relationship Between the Site and the Surrounding Communities

(Source: <https://www.gooood.cn/redevelopment-of-chelsea-waterfront-farrells.htm>)

(2) Design Positioning

Lots Road is one of three power stations along the Thames that have historically been the heart

of an industrial zone and an urban icon, and will remain as a city landmark after renewal. Farrells' master plan is to create a new "urban village" here.

The project will include both private and economic housing. To better support the community's population, the design of composite commercial facilities, public transport links and community supporting facilities will be considered. For example, there will also be shops, restaurants, bars and an exclusive fitness club for residents. The 600-meter-long waterfront area will be open to the public in order to achieve sustainable development in terms of social, economic and environmental benefits.

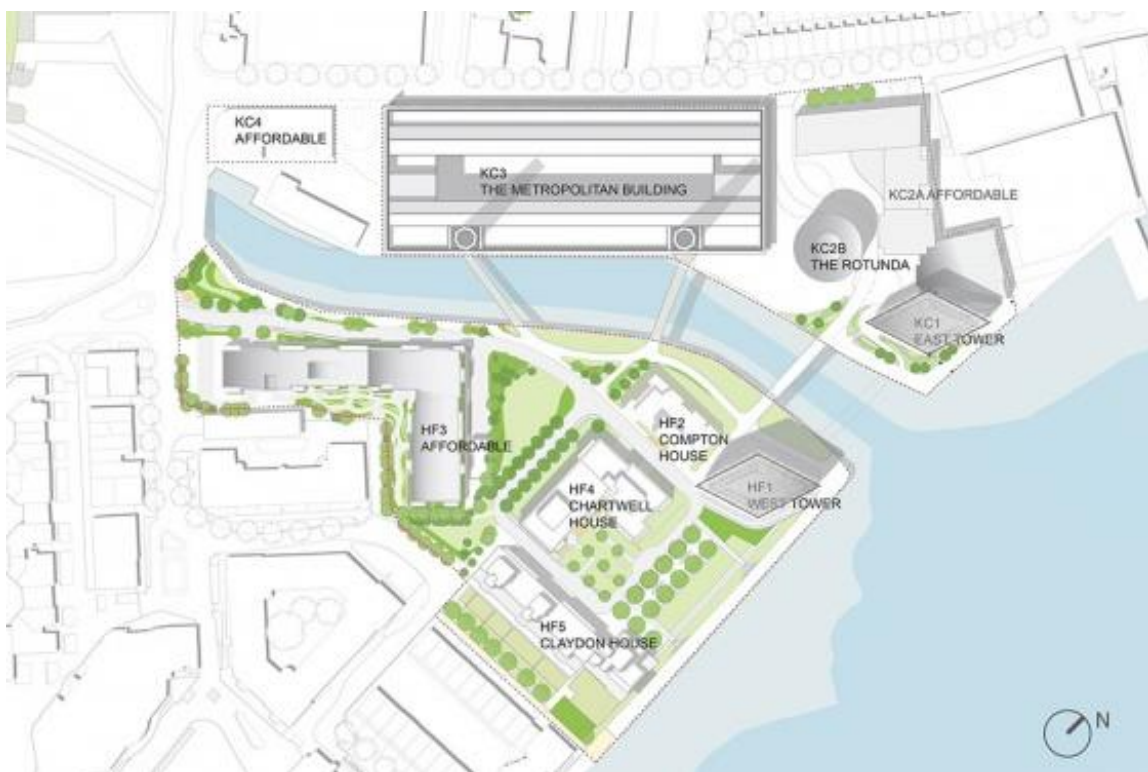


Fig 3-19 Master Plan of the Chelsea Old Industrial Waterfront Area Renewal Project (Source: redrawn by author based on <https://www.gooood.cn/redevelopment-of-chelsea-waterfront-farrells.htm>)

(3) Design Strategy

Accessibility

On the urban scale, the site is connected to the nearby larger-scale Lots Road community,

Chelsea Harbour and Empire Quay by community services and public transport network, in order to enhance the connectivity between the site and surrounding city communities and form a more complete and prosperous waterfront urban community settlement.

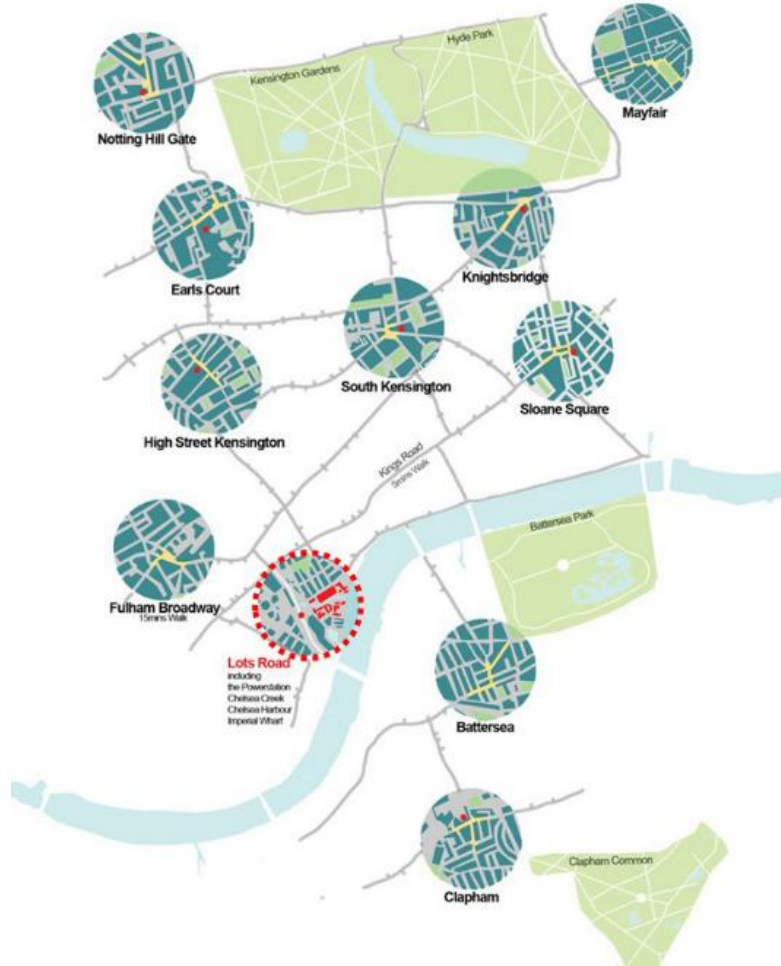


Fig 3-20 Analysis on the connection among Chelsea Waterfront Community with the Surrounding City Communities (Source: <https://www.gooood.cn/redevelopment-of-chelsea-waterfront-farrells.htm>)

On the scale of the site, permeated streets and public spaces connect multiple functions within the site, and directly pass through the industrial heritage buildings, connecting the urban hinterland with the waterfront area, which is capable of improving the accessibility of the internal space of the industrial heritage and the open space of the waterfront at the same time.

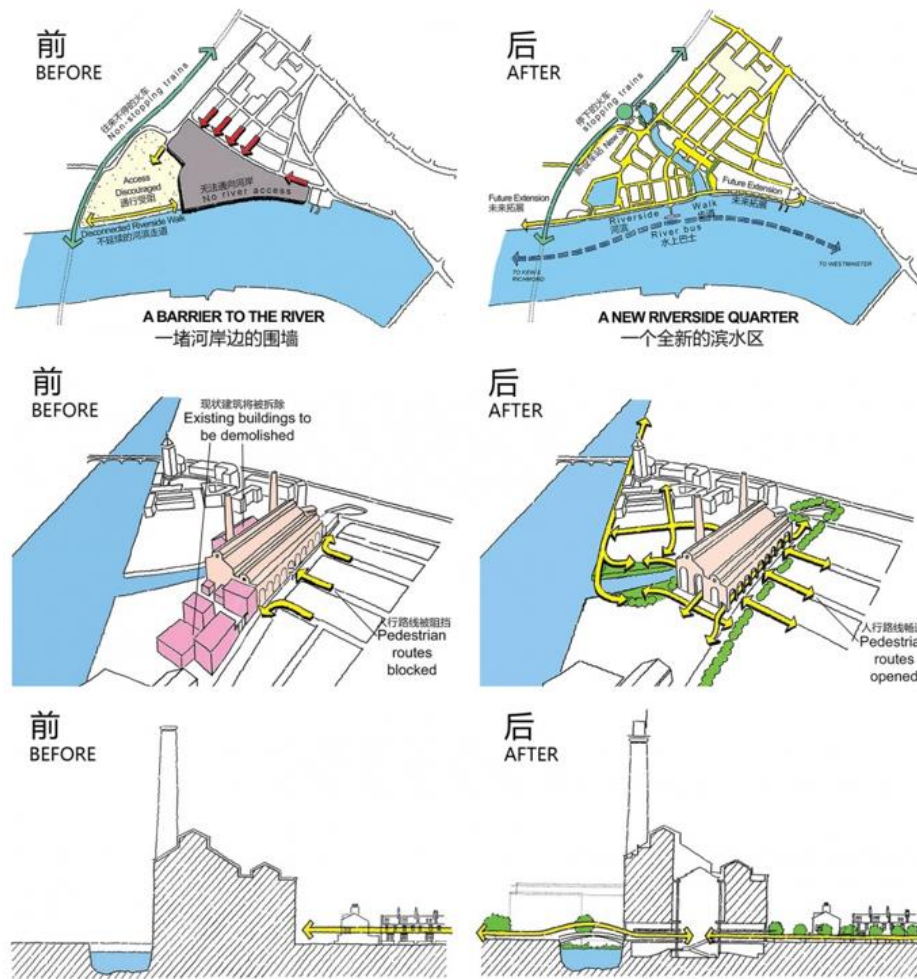


Fig 3-21 Analysis on the Accessibility Strategy of the Chelsea Waterfront Area Renewal

(Source: <https://www.gooood.cn/redevelopment-of-chelsea-waterfront-farrells.htm>)

Openness

In the spatial interface treatment, the brick wall between columns on the facade of the first floor of the power station is completely removed, and the interior of the former engine hall will be transformed into a double-height atrium space. The stores face the street with a double-height large glass. The lifeless street that was blocked by the brick wall takes on a new look, and establishes visual connection with the waterfront open space to the maximum extent, which greatly improves the visual openness of the waterfront space.

In terms of opening time control, the waterfront open space in the site is open to all people free of charge at any time, which is a shared space for all citizens, while the opening time setting of

the building space near the city is subject to the use of residents.

Inclusiveness

The redevelopment project will add more than 800 apartments to the Chelsea waterfront area. Excluding private ones, about 40% of the apartments will be designed as economic housing, which will be sold or rented at below-market prices, encouraging low-income families and the super-rich to live together in a mixed-use community for all. As a result, the Chelsea waterfront area will have stronger inclusiveness for different social classes.



Fig 3-22 Analysis on Housing Distribution in Chelsea Waterfront Area Renewal Project

(Source: <https://www.gooood.cn/redevelopment-of-chelsea-waterfront-farrells.htm>)

The interior of the power station will be transformed into a unique community complex, with a mix of residential and garden facilities on the upper floors and a mix of commercial, leisure, education and community services on the lower floors, which will be shared by the community and become the communal center of the community.

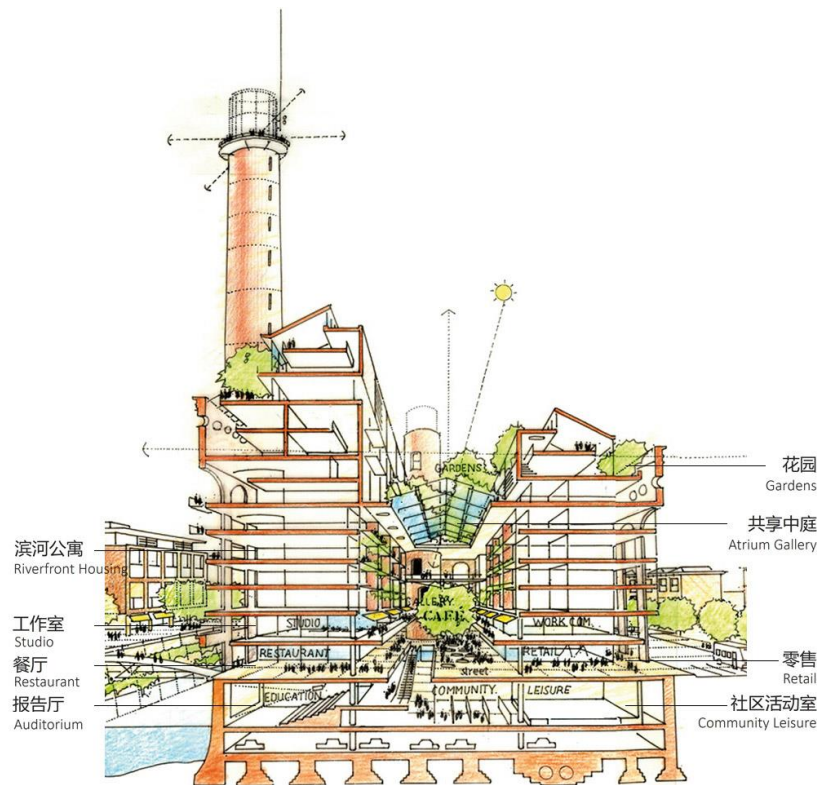


Fig 3-23 Diagram of Vertical Function Mix in the Power Plant Renewal Scheme (Source: <https://www.gooood.cn/redevelopment-of-chelsea-waterfront-farrells.htm>)

Recognizability

In the overall architectural landscape of the site, the landmark industrial chimneys were retained and new high-rise residential towers were built on both sides of the power plant, greatly enhancing the recognizability of the site in the Thames River landscape.

In the facade design of the power plant building, the designer reveals the diversity of internal functions through the transformation of local forms and materials. The new three-story full-height glass on the ground floor of the power station conveys its open and shared community function to the citizens, while the small windows on the upper floors and more delicate textures such as brick blocks and terracotta panels herald the more private function of the interior as a residence.

Inside the power station, the interior of the former engine hall has been transformed into a double-height atrium, flanked by vitrines and seating areas that clearly communicate to people

the internal functions of the building. The planting and seating arrangement in the open space also distinguish the degree of privacy of the space and guide people to take a rest here.

Cultural Continuity

The consideration on continuing the industrial history of the site is reflected in the restoration and exposure of the industrial landscape on the open space, and the exterior and the interior of the building. In terms of the overall landscape of the site, the designer tries to protect the red brick facade of the power plant and industrial chimneys to ensure the integrity of the historical landscape of the site, while the contrast of material transparency and color between the old and new buildings, as well as the unity of the formal language dominated by vertical lines, convey the internal relationship between the old and new buildings and achieve a harmonious urban landscape.



Fig 3-24 Urban Landscape pf Chelsea Waterfront Area after the Renewal (Source:

<https://www.gooood.cn/redevelopment-of-chelsea-waterfront-farrells.htm>)

In the facade design of the power plant building, the designer retains most of the original red brick materials, and selects brick blocks and terracotta boards that are similar to the original materials in color and texture, and in harmony with each other during the adaptive transformation, establishing a dialogue between the old and new materials and forming a harmonious architectural landscape. Inside the power station, the interior of the former engine

hall will be transformed into a double-height atrium, revealing the industrial history of the power station through the exposed truss structure.

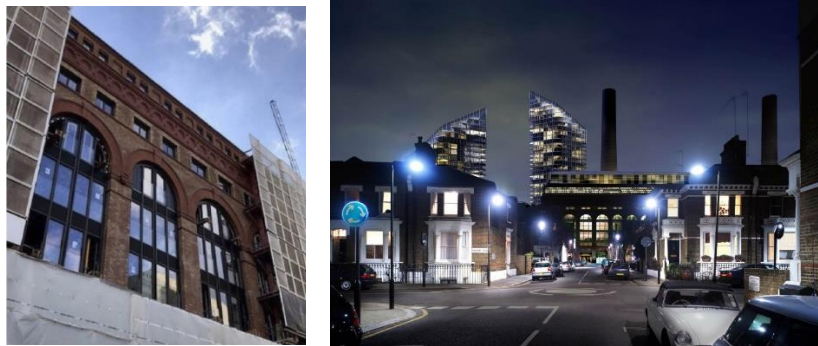


Fig 3-25 the Design of the Power Plant Façade (Source:

<https://www.gooood.cn/redevelopment-of-chelsea-waterfront-farrells.htm>)

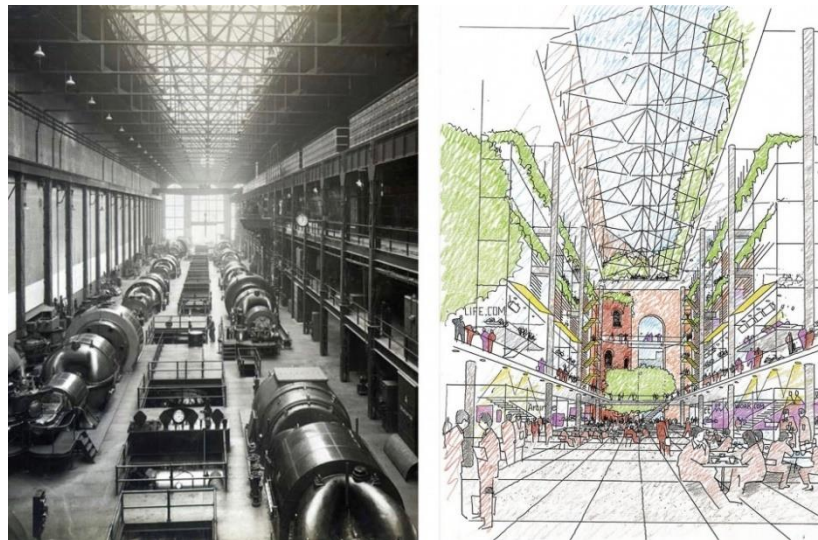


Fig 3-26 Photo in History and the Illustration of Renewal Scheme of the Interior of the Power

Plant (Source: <https://www.gooood.cn/redevelopment-of-chelsea-waterfront-farrells.htm>)

3.5 Summary

In general, the renewal of urban waterfront industrial heritage under the guidance of publicness concept has strong flexibility and diversity. The renewal can take into account both social and economic benefits, and establish a closer and multi-dimensional connection with the surroundings and outer city area. Furthermore, it avoids the problem of excessive

commercialization and homogenization of waterfront area and industrial heritage which are easily caused by the functional dominated reuse model, and broadens the social value of waterfront industrial heritage in contemporary cities. Moreover, the renewal of waterfront industrial heritage guided by publicness should not only pay attention to the promoting effect of physical space on social interaction, but also the openness of the site's culture and history to society.

In the design strategy of improving the external accessibility of the site, priority is given to the design and improvement of public transport systems to establish public links between the waterfront and surrounding communities. Moreover, the design of the water transportation system enhances the connection between the site and other waterfront spaces, and enrich the transportation experience. A multi-level slow traffic system composed of continuous pedestrian paths, bicycle paths and linear parks can be set up along and perpendicular to the river bank.

In terms of the internal accessibility, increasing the road density inside the site, using the inner road to connect the waterfront open space and the industrial heritage and weakening the boundary between the road and the space, and the directivity of the pedestrian street are three effectful methods.

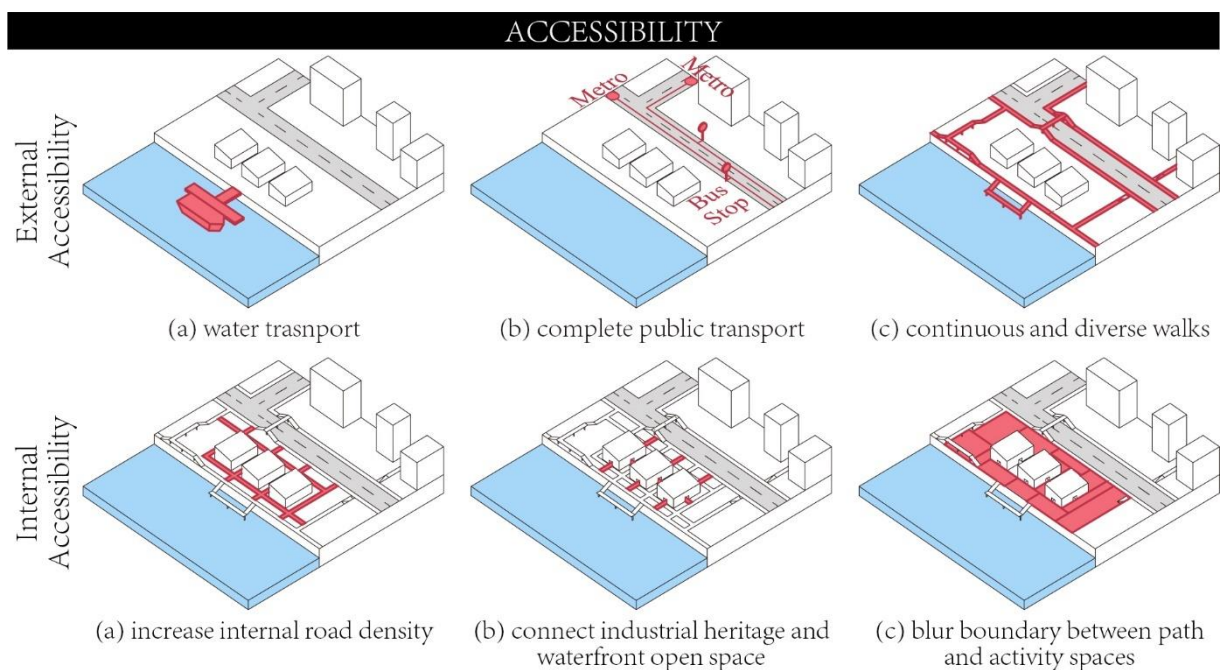


Fig 3-27 Accessibility Strategies Summary (Source: by author)

To enhance the openness of the site, it can be realized mainly from improving the permeability of spatial interface and extending the opening time of the space. The openness of the building interface can be enhanced by the installation of verandas or other functional spaces and the use of permeable elements such as large windows and openings in the facade design. The open space interface can reduce the use of restrictive fences and instead control the openness by different height and density of the greenery. The opening hours of industrial heritage and open space in the site can vary with the distance from the water. The closer the industrial heritage and open space are to the water, the longer the opening hours should be. The space located on the shore is best open to the public for 24 hours, while the industrial heritage near the inner city providing urban services can set the opening hours according to the functional requirements.

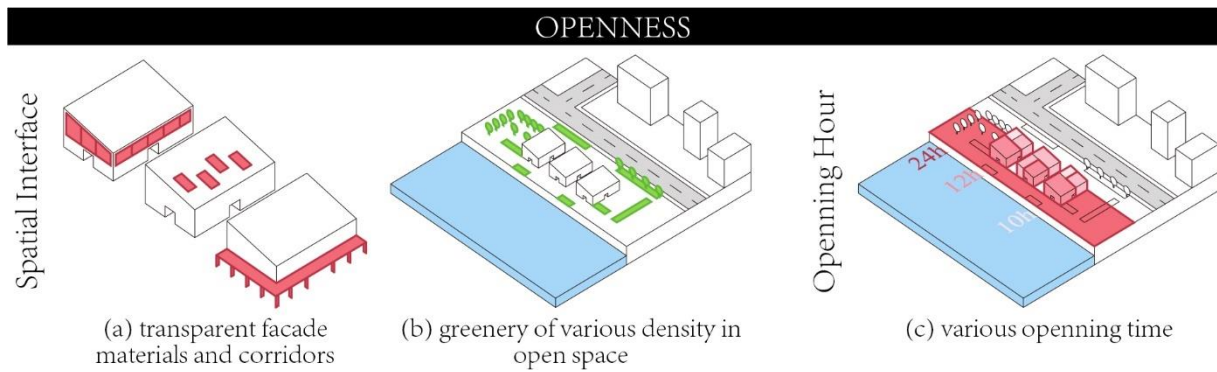


Fig 3-28 Openness Strategies Summary (Source: by author)

The strategy to improve the inclusiveness could be summarized as mixed public functions and mixed social groups. In terms of mixed functions, the function arrangement in waterfront industrial heritage renewals can be considered from scales of city, block and building, so as to meet the needs of different groups. In large-size activity space, movable devices can be designed to improve the tolerance of space to different types of activities. Regard to mixed social groups, completing the public rest facilities system and barrier-free facilities system can response to special needs of the elderly, children and other inferior groups. Furthermore, holding various social activities in the waterfront industrial heritage and reserving space for different social strata in the planning of waterfront residential communities are helpful as well.

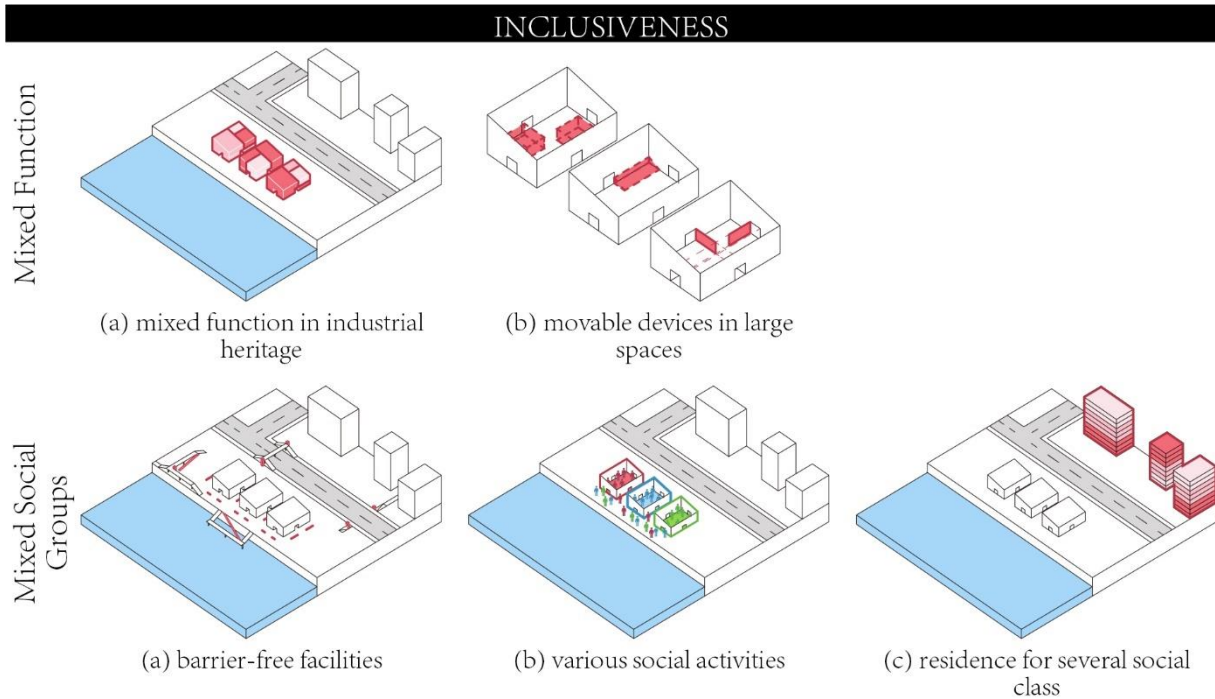


Fig 3-29 Inclusiveness Strategies Summary (Source: by author)

To improve the recognizability of the site, the overall recognizability in the urban landscape can be realized by preserving the visual focus of the waterfront industrial heritage, especially the industrial structures with great height and limiting the height of new constructions near the industrial heritage sites to avoid occlusion. In terms of space function recognizability, the division and functional potential of the outdoor space can be conveyed to the user through the form and material design of the paving, the density and height of the greenery, and the location and orientation of the rest space. The internal function of the building can be revealed through the formal language and material transformation of the façade.

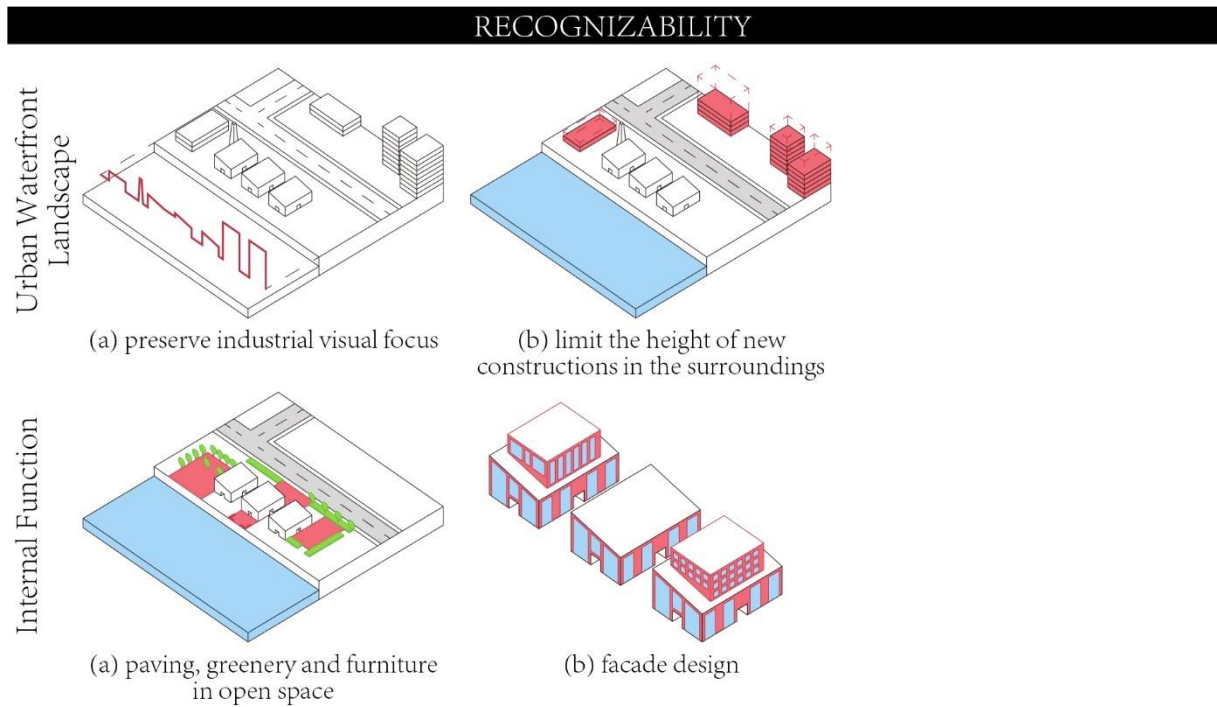


Fig 3-30 Recognizability Strategies Summary (Source: by author)

Strategies for realizing cultural continuity could be divided into levels of urban landscape, urban block, architecture and open space. In the construction of the riverbank landscape, the integration between industrial heritage and modern urban architecture can be strengthened by preserving and restoring the industrial landscape, controlling the height of the surrounding buildings, and integrating the facade elements of the old industrial buildings into the surrounding new buildings. In the design of open space landscape structure facing the city interior, the industrial landscape can be highlighted through the configuration of greening. In urban block scale, through the connection of passable road and visual corridor, the spatial texture of waterfront industrial park and surrounding city is restored. In terms of function, by placing new functions in the waterfront industrial heritage that respond to the needs of surrounding cities and have a certain correlation with industrial history, the integration of old and new spatial memory is realized. At architecture level, it is effective to preserve and restore the internal structure of the industrial heritage, integrate the internal structure with the new function and expose part of the structure appropriately to represent the industrial history of the

building. In open spaces, retaining the site's original industrial traces such as tracks and cement floors and designing urban furniture referring to original industrial structure in terms of material, color and form enable the cultural continuity in overall spatial atmosphere.

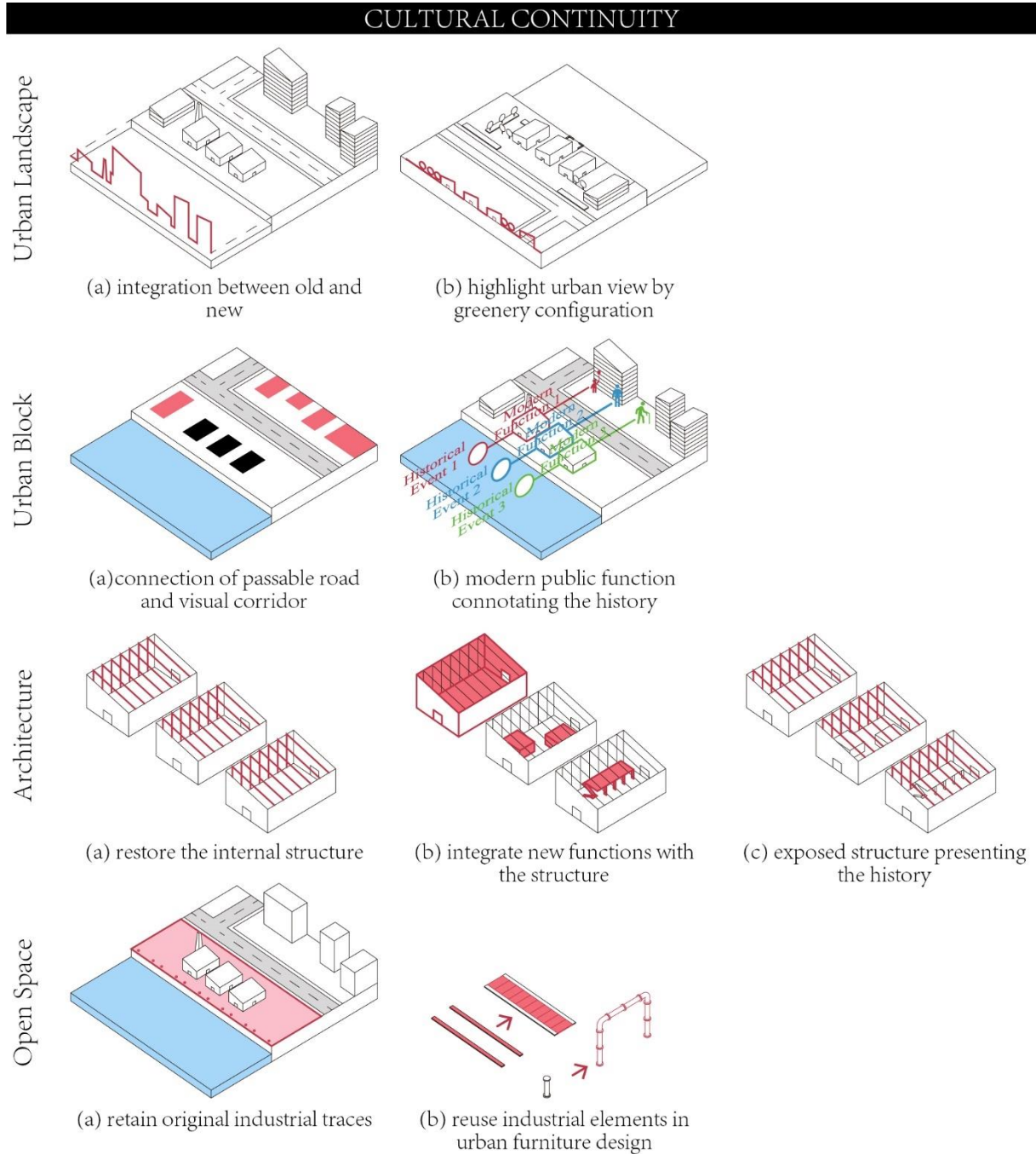


Fig 3-31 Cultural Continuity Strategies Summary (Source: by author)

Chapter 4 Major Characteristic and Status of Protection and Utilization of Guangzhou Waterfront Industrial Heritage

4.1 Formation and Distribution of Guangzhou Waterfront Industrial Heritage

Guangzhou has developed along the Pearl River since ancient times. With the gradual expansion of the city scale and crossing the river, the Pearl River bank line has gradually become an important linear development axis and spatial boundary of Guangzhou.

Living bank line is a bank line dominated by urban public functions, which mainly undertakes living service functions such as residence, recreation, commercial consumption and so on, and is an important spatial carrier of public life. The production bank line refers to the industry, storage facilities, port and ship wharf bank line dominated by industrial activities such as industrial production, storage and transportation.

The function of Guangzhou waterfront area has experienced three stages in general: rich and varied living functions, the development of industrial functions, and the decline of industrial functions and the return of living functions. Guangzhou waterfront industrial heritages are mainly formed in the third stage with the relocation of industries and become important nodes of reconstruction of Guangzhou waterfront space living function.

4.1.1 Evolution of the Relationship between Waterfront Area and the City

(1) The waterfront area carries rich and diverse living functions

Relying on the water resources and convenient water transportation condition of the Pearl River,

the ancient city of Guangzhou experienced the natural evolution process of living near the water, thriving because of the water, and integrating the water with the city. ^[107] The development of shipping traffic based on the Pearl River has promoted the development and prosperity of commercial activities and public life in the waterfront area. In the Qin and Han Dynasties, Guangzhou became an important node of the Maritime Silk Road due to the geographical advantage of the Lingnan water network gathering here and then going to sea, and the commercial status of the city initially emerged. In the Tang and Song dynasties, the prosperity of the Maritime Silk Road drove the development of Guangzhou. The urban water network system gradually matured and commercial districts are formed relying on the water network to carry commercial and recreational activities for citizens and foreign businessmen. The wharf also began to form the functional structure of inner harbor and outer harbor. In the Ming and Qing Dynasties, under the influence of the maritime prohibition policy and the trade policy, the commercial economy of Guangzhou continued to develop and the foreign trade was unprecedentedly prosperous. Relatively large-scale commercial and residential areas were formed in Xiguan and Henan districts along the Pearl River, and the Lingnan water- town culture with regional characteristics was formed. ^[107]

At this stage, the Pearl River waterfront area was mainly for shipping and daily life. The Pearl River was closely related to the life of urban residents and foreign businessmen. All kinds of public activities, such as production and life, entertainment, food, commerce and festival activities, took place in the riverside area. At that time, people sang life into salty-water songs, listened to Cantonese opera in waterfront teahouses and theaters, ate a bowl of boat congee on the banks of the river, visited commercial markets in the docklands, and sat on the banks watching children perform on rafts and boat stages. ^[108] Nowadays, these colorful portraits of life are still representative of Lingnan cultural history.

(2) The development of industrial function in waterfront area

In early modern times, the convenient shipping transportation of the Pearl River is favored by

industrial development, and the industrial oriented urban development gradually disintegrates the organic connection between waterfront space and city.

In the late Qing Dynasty, the modern industry of Guangzhou appeared with the invasion of foreign imperialism ^[109]. The rise of the Westernization Movement further promoted the industrial development of Guangzhou. In the 1870s, a large number of returned overseas Chinese and businessmen began to invest and set up factories in Guangzhou and its surrounding areas. In this period, industries were mainly new industries such as shipbuilding, warehousing and military, and traditional industries such as paper making, food processing and textile. Factories were mainly located in Xiguan and along the Pearl River. At this stage, the volume and scale of industrial buildings are relatively small, and there is still no large industrial gathering area. During the Republic of China era, the government established the Xicun Industrial Zone and the Henan Industrial Zone along the Pearl River. Foreign firms had also built numbers of docks and warehouses on both sides of the Pearl River. By 1945, Guangzhou's industry along the river had begun to take shape. A light industrial base adapted to Guangzhou's commodity market was formed, covering more than 20 industrial types such as machinery, chemical industry and food processing, with a relatively complete industrial system. During the early year of New China, industrial production, which had stagnated after the war, gradually resumed. During the First Five Year Plan period, a number of state-owned modern factories with socialist characteristics were built in Guangzhou, and several large industrial zones were distributed along the river near Industrial Avenue, Yuan Cun, Hedong and Huangpu. At that time, heavy industry became the focus of Guangzhou city development, and industrial production caused increasingly serious pollution and damage to the waterfront ecological environment. The relationship between citizens' life and water continued to be separated.

(3) The decline of industrial function and revival of living function in waterfront area

After the reform and opening up, the development direction of Guangzhou city has changed from a single industrial orientation to a comprehensive development centered on social

economy. The industrial functions began to move out, and the abandoned industrial and storage land along the waterfront was increasing day by day. In the 1990s, the value of urban waterfront area was first seen by real estate developers. Urban development dominated by economic interests led to the transformation of a large number of old waterfront industrial zones into real estate development violently.^[110] Waterfront area along the Pearl River was gradually occupied by closed residential communities, and waterfront space privatization was serious. With the urban development entering the stock planning stage, the stock waterfront space has received attention again. Creating richer public life on the waterfront and reconstructing the organic relationship between people, water and city has become one of the key points of urban construction in Guangzhou in recent years. The renewal of the industrial heritage of the riverside has become one of the important means to activate the public vitality of the waterfront district.

The exploration and practice of transforming production space into public space in Guangzhou waterfront old industrial zone began in the early 21st century. The Suppress the Second Industry and Develop the Third Industry policy proposed in 2008 encourages the use of old industrial zones to run creative industries. In 2009, the Three Old Transformation further promoted the renovation of the old factory in the city. In 2012, the *Master Plan of Guangzhou City (2010-2020)* proposed to optimize the functional layout of the central urban area and improve the environmental quality by renewing old industrial areas. The replaced industrial land is given priority to the construction of municipal, public facilities and urban green space.

In order to further standardize the renewal of old industrial zones, the related work of cultural relics value assessment was gradually carried out. In 2008, the first batch of modern industrial heritage was included in the list of Municipality Protected Historic Site. In 2013, in order to fill the vacancy of the municipal list, Guangzhou began to evaluate the Historical Buildings. Excellent modern and contemporary buildings represented by Chengzhitang Warehouse and Huaqiao Sugar Factory were announced as Historical Buildings. The official evaluation of waterfront industrial heritage protects the publicness of urban historical context and waterfront space.

In terms of the overall planning of the Pearl River waterfront, the *Overall Urban Design and Regulation Adjustment along the Pearl River in Guangzhou* in 2012 proposed the construction objectives of public life waterfront in three sections of the Pearl River segment. In 2018, each district of Guangzhou began the planning and construction of the Greenway system in order to connect various urban public services and historical and cultural nodes. Up to now, the continuous riverside greenway in the urban center of Guangzhou has been built and perfected, most waterfront industrial heritage has been incorporated into the urban development planning, and the waterfront space planning has changed from a one-way line along the bank to a surface form deep inside the urban hinterland, and the public services and cultural functions will be further developed and perfected.

4.1.2 Current Distribution Status of Guangzhou Waterfront Industrial Heritage

Guangzhou waterfront industrial heritage is mainly concentrated in Baietan zone, and scattered in Xicun zone, Henan zone, Yuancun zone, Luoxi zone and Huangpu zone.

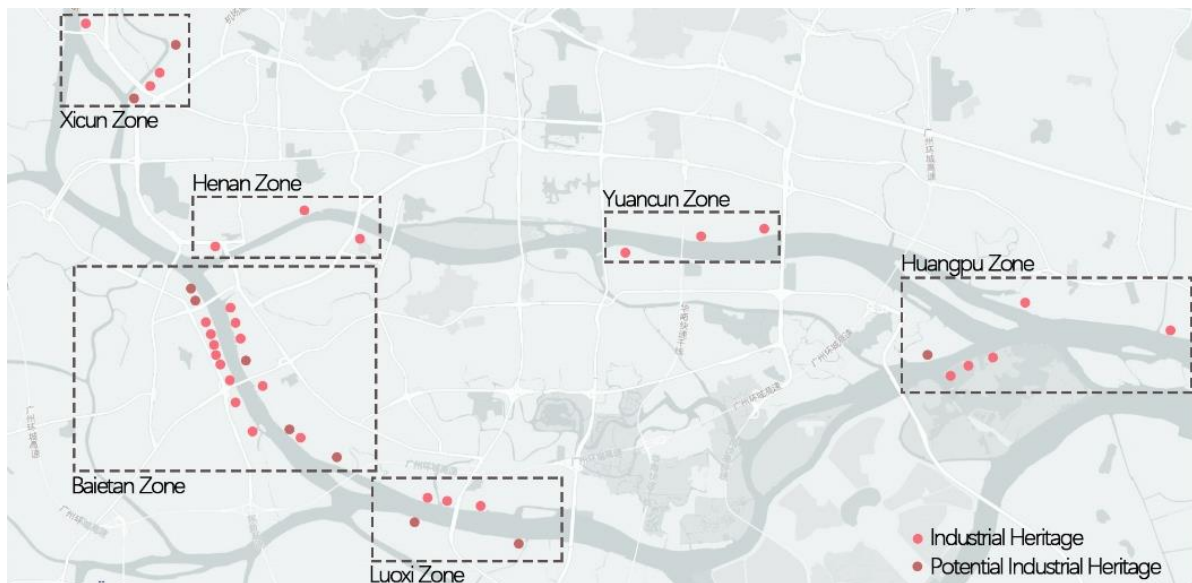


Fig 4-1 Guangzhou Waterfront Industrial Heritage Distribution Map (Source: by author)

(1) Baietan Zone

Baietan is located at the intersection of the three river courses of the Pearl River. It is the area with the most concentrated waterfront industrial heritage in Guangzhou. In 1861, Britain and France established the first concession of China in Shamian, Guangzhou. Baietan originally had excellent transportation conditions. The completion of Shamian concession had further enhanced the location value of Baietan section, and foreign banks had built docks and built warehouses here. Their business and storage range were wide, from grain, oil and food, transportation and shipping as well as machinery manufacturing and ammunition are involved. In 1927, Swire began to build a warehouse in White Shell in the back channel, which was one of the most advanced wharf warehouses in Guangzhou.^[111] In addition, foreign warehouses built during the same period and largely intact to date include the Osaka Warehouse, the Asiatic Huadi Warehouse, the Asiatic Longmai Warehouse, Zhadian Warehouse, and the Texaco oil Depot, as well as a small number of national capital industries, such as the Xietonghe Machinery Factory and the Chengzhitang Warehouse. In 1932, Guangzhou government released the *Draft Outline of Guangzhou Urban Design*, which set up an industrial zone along the river, further expanding the port advantage of Baietan zone. After the founding of the People's Republic of China, modern factories such as Guangzhou Steel Fctory and Guangzhou Ship Factory have been built in the south of Baietan zone. Fangcun Heavy Industrial Zone was an important heavy industry base of Guangzhou in the early socialist period.

From the foreign freight storage in the late Qing Dynasty to the start of national industry in the Republic of China, to the construction of large-scale heavy industry after the founding of the People's Republic of China, Baietan area has witnessed the development of modern industry in Guangzhou, with diverse types and distinctive industrial heritage, and has important historical and social value.^[112]

At present, Baiyetan is also one of the leading areas for the protection and reuse of industrial heritage in Guangzhou. Since 2008, 9 waterfront old industrial zones have been rated as Municipality Protected Historic Sites. Chengzhitang Warehouse and Guangzhou Paper Mill were rated as Historical Buildings, and various industrial heritage renovation projects such as

Taikoo Warehouse Fashion Park, Hongxin 922 Creative Park and Xinlei Kindergarten have been completed one after another. The transformation projects of potential industrial heritage, such as Xinyi Guild Hall and 1850 Creative Park, also reflect the forward-looking protection consciousness of the developers and have a positive social impact. However, the land use of Baietan area along the river is dominated by various residential areas, while the renewal projects of industrial heritage are mostly dotted renewal projects in the mode of cultural and creative parks, and some reconstruction projects have weak links with surrounding residential functions and lack of overall continuity of the area. In addition, there are a lot of waterfront industrial heritages are still in idle state, in urgent need of protection and renewal.



Fig 4-2 Distribution Map and Main Industrial Heritages in Baietan Zone (Source: by author)

Tab 4-1 Main Waterfront Industrial Heritage in Baietan Zone (Source: by author)

No.	Name	Built Year	Degree of Protection	Status Quo of Utilization	Land Use of the Surroundings
1	Taikoo Warehouse & Wharf	1904-1933	Chinese Industrial Heritage (the 2 nd batch); Municipality Cultural Relic Protection Unit (the 7 th batch)	Renovated as a multifunctional commercial and cultural scenic spot in 2008; the renewal project of office and commercial complex in the reconstructed area was launched in 2021	Common residential area

2	Asiatic Huadi Warehouse	1906	Municipality Cultural Relic Protection Unit (the 7 th batch)	Renovated as five-star hotel in 2006	Urban village
3	Asiatic Longmai Warehouse	1906	Municipality Cultural Relic Protection Unit (the 7 th batch)	Exhibition hall and gym	Factory
4	Xietonghe Machinery Factory	1911	Chinese Industrial Heritage (the 1 st batch); Municipality Cultural Relic Protection Unit (the 7 th batch)	Renovated as Hongxin 922 Creative Park in 2011	Common residential area
5	Zhadian Warehouse	1913	Municipality Cultural Relic Protection Unit (the 7 th batch)	In idle	Common residential area
6	Meifu Warehouse	1920	Municipality Cultural Relic Protection Unit (the 7 th batch)	In idle	Factory, common residential area
7	Riqiqng Warehouse	1921	Municipality Cultural Relic Protection Unit (the 7 th batch)	In idle	Urban village, common residential area
8	Texaco Oil Depot	1924	Municipality Cultural Relic Protection Unit (the 7 th batch)	In idle	Common residential area (under construction)
9	Chengzhitang Warehouse	1925	Municipality Historical Building (the 1 st batch)	Renovated as Xinlei kindergarten in 2018	Urban village
10	Daban Warehouse	1927-1934	Municipality Cultural Relic Protection Unit (the 7 th batch)	Renovated as the 1904 Creative Park in 2017	Urban village
11	Guangzhou Paper Mill	1936	Municipality Historical Building (the 3 rd batch)	Still in use	Common residential area
12	Changgang Oil Depot	1958	Chinese Industrial Heritage (the 2 nd batch); Municipality Cultural Relic Protection Unit (the 3 rd batch)	Planned to be renovated as Guangzhou Industry Museum in 2009, but still in idle now	Common residential area
13	Guangzhou Shipyard	1950s	Traditional Architecture	Planned to be renovated as Waterfront Shipyard Theme Park and Shipyard Museum	Common residential area, urban village

Tab 4-2 Main Potential Waterfront Industrial Heritage in Baietan Zone (Source: by author)

No.	Name	Built Year	Status Quo of Utilization	Land Use of the Surroundings
1	Watsons Warehouse	1930s	In idle	Common residential area
2	Guangzhou Shuangqiao Monosodium Glutamate Factory	1948	Prepare to move	Urban village, common residential area
3	Guangzhou Bicycle Factory	1959	In idle	Urban village, common residential area
4	Guangdong Water Conservancy and Hydropower Plant	1960	Renovated as Xinyi Guild Hall in 2008	Urban village, public services
5	Jinzhu Hydrogen Peroxide Plant	1960s	Renovated as the 1850 Creative Park in 2009	Urban village, public services

(2) Luoxi Zone

Luoxi Zone is located in the back channel of the Pearl River. It is a relatively new industrial area formed by the southeast extension of Baietan Industrial Zone. The Ship Repair and Building Plant of the Fourth Navigation Engineering Bureau of the Ministry of Communications, the Chenganwei Shipyard and the Guangzhou Daganwei Warehouse & Wharf are all state-owned industrial zones built after the founding of the People's Republic of China, while Shangjiao Shipyard and Luoxi Village Industrial Zone are local private enterprises established after the reform and opening up.



Fig 4-3 Distribution Map and Renovated Industrial Heritage in Luoxi (Source: by author)

The industrial heritage renewal activities in this area are characterized by the fact that the protection and renewal action precede the cultural heritage value assessment, and echoes the current environment and future planning of the surrounding cities, with a strong sense of protection and overall awareness. Chenganwei Shipyard and Daganwei Warehouse were transformed into science and technology park and art and creative park respectively before being assessed as Guangzhou Municipality Historical Buildings in 2022. They are linked with the surrounding industrial production areas and become the benchmark cases for the renewal of waterfront industrial heritage in Haizhu District. In order to avoid the destruction of historical relics caused by extensive transformation mode, Luoxi Village Industrial Zone tries a new renewal mode of Micro Transformation, exploring the renovation of stock buildings from point to area, improving the utilization rate of inefficient land, and the renovated Fisherman's Wharf Innovative Community provides various living services for the surrounding residential areas. Shangjiao Shipyard has been innovatively transformed into a cultural hotel, which fits in with the natural environment and formed by surrounding farmland the Pearl River. However, the Ship Repair Factory of the Fourth Maritime Engineering Bureau of the Ministry of Communications, which was listed as a municipal historical building in 2014, has been abandoned due to its location in an industrial zone still in use.

Tab 4-3 Main Waterfront Industrial Heritage and Potential Heritage in Luoxi (Source: by author)

No.	Type	Name	Built Year	Degree of Protection	Status Quo of Utilization	Land Use of the Surroundings
1	Industrial Heritage	Ship Repair Factory of the Fourth Maritime Engineering Bureau of the Ministry of Communications	1951	Municipality Historical Building (the 2 nd batch)	In idle	Commerce and office, park, urban village, industry
2		Chenganwei Shipyard	1974	Municipality Historical Building	Renovated as science	Industry, residential area

				(the 7 th batch)	park in 2016	(to be built)
3		Daganwei Warehouse	1950s	Municipality Historical Building (the 7 th batch)	Renovated as B.I.G. Art Park (office, commerce) in 2019	Industry, residential area (to be built)
4	Potential Industrial Heritage	Shangjiao Shipyard	1984	/	Renovated as cultural hotel in 2012	Farmland
5		Luoxi Village Industrial Zone	1988	/	Renovated as Fisherman's Wharf Innovative Community in 2013	Common residential area, village, education facility, farmland

(3) Xicun Zone

Xicun zone, located in the northwest of Guangzhou city, is one of the earliest planned industrial zones in Guangzhou. In the late Qing Dynasty, the government began to build factories here. During the Westernization Movement, with the construction of Zengbu Gunpowder Factory and Guangdong Machinery Factory, Xicun area became an important military base. In 1932, the *Draft of Guangzhou Urban Design Brief* included Xicun zone as an industrial zone, and the Zengbu Water Plant and Xicun Power Plant were built at this stage. Later, some high-emission manufacturing and chemical factories were also located here, and the Xicun zone gradually became an important industrial zone with local basic industries as the core of Guangzhou.

The industrial heritages of Xicun Industrial Zone are mostly intact and diversified. Several parks not only have rich industrial architectural heritage, but also natural historical resources such as ancient trees. The Zengbu Water Plant is still in use, and the Guangzhou Beverage Factory is now a vibrant cultural and creative park with close link to the surrounding community at both the transport and functional levels. The creative park of Guangzhou Overseas Chinese Sugar Factory did not work well after the renewal, and now it is preparing for the construction of science and technology innovation center which is more in line with the surrounding enterprise environment. The Xicun Power Plant was demolished because it had caused too

much pollution to the surrounding residential areas. On the whole, the renewal of the waterfront industrial heritage in the West Village area should pay more attention to the protection of the overall industrial landscape composed of the building and natural environment in the industrial park, and establish an organic connection with the surrounding communities and urban functions.



Fig 4-4 Distribution Map and Renovated Industrial Heritage of Xicun (Source: by author)

Tab 4-4 Main Waterfront Industrial Heritage and Potential Waterfront Industrial Heritage in Xicun Zone (Source: by author)

No.	Type	Name	Built Year	Degree of Protection	Status Quo of Utilization	Land Use of the Surroundings
1	Industrial Heritage	Zengbu Water Plant	1908	Guangzhou Water Heritage (the 1st batch)	Still in use	Residence, education
2		Guangzhou Beverage Factory	1934	Municipality Cultural Relic Protection Unit (the 7 th batch); Municipality Historical Building (the 5 th batch)	Renovated as the Original Elements Creative Park in 2011	Urban village, common residential area, living services, waterworks
3		Guangzhou Overseas Chinese Sugar Factory	1955	Municipality Historical Building (the 2 nd batch)	Renovated as culture creative park in 2010, and the construction of science and technology research and development center since 2020	Urban village, common residential area
4	Potential	Xicun	1937	/	Being demolished to make	Common

	Industrial Heritage	Power Plant			way for a new industrial park	residential area
5		Guangzhou Lime Plant	1950	/	Renovated as creative park in 2007	Common residential area

(4) Henan Zone

Henan area is located in the key area of Pearl River Delta, and was planned and constructed at the same time as Xicun Industrial Zone. Guangdong Shimin Soil Plant, British Snow Plant and Wuxianmen Power Plant are all early foreign investment construction industry with high cultural relic value, and are national and municipal protected cultural relics respectively. Guangdong Shimin Soil Factory is the earliest practice of industrial relics renewal in Guangzhou. Because it was set up as the Grand Marshal's Palace twice by Sun Yat-sen, the renovation of museum mode matches its historical value well. Located in Shamian, the British Snow Works is the only remaining factory in the area, which together with other conservation buildings forms the historical landscape of the Shamian Concession. The Wuxianmen Power Plant, which was transformed into the Guangzhou Overseas Chinese Museum, is now one of the popular cultural attractions of the citizens. As a whole, Henan's industrial heritage has high historical value, and museum-oriented renewal activities match its historical status, providing high-quality public cultural space for the surrounding area.

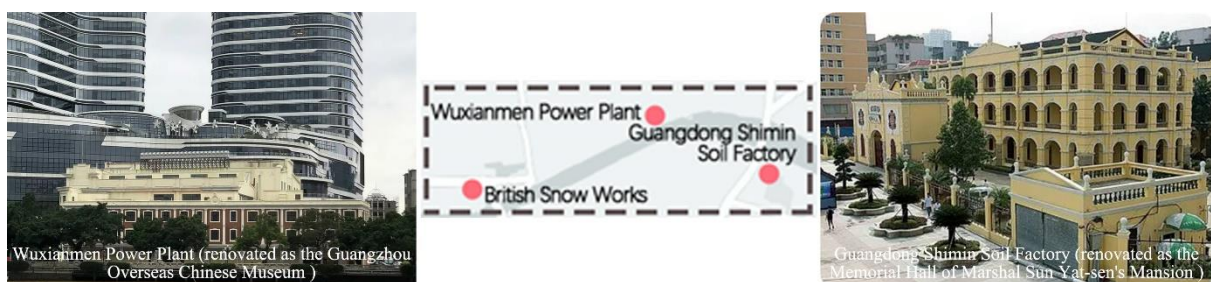


Fig 4-5 Distribution Map and Renovated Industrial Heritage of Henan (Source: by author)

Tab 4-5 Main Waterfront Industrial Heritage in Henan Zone (Source: by author)

No.	Name	Built Year	Degree of Protection	Status Quo of Utilization	Land Use of the Surroundings
1	Wuxianmen Power Plant	1901	Municipality Cultural Relic Protection Unit (the 7 th batch)	Renovated as the Guangzhou Overseas Chinese Museum in 2021	Commerce, medical, park residence
2	Guangdong Shimin Soil Factory	1907	National Cultural Relic Protection Unit	Renovated as the Memorial Hall of Marshal Sun Yat-sen's Mansion in 2007	Residence, education
3	British Snow Works	Early 20 th century	National Cultural Relic Protection Unit	Scenic spot	Public facility, scenic spot

(5) Huangpu Zone

Huangpu zone is the easternmost industrial area of Guangzhou, and is the transition point of the inner and outer waterways of the Pearl River. During the period of the Republic of China, Huangpu was an important port of Guangzhou, and also the place where the earliest waterfront industry started. Couper Shipyard was the first western shipyard set up in China, and later several foreign shipyard companies set up in this area, which is an important historical relic of modern foreign industries in China. After the founding of the People's Republic of China, Huangpu industrial zone was expanded, and a group of key enterprises such as Huangpu Power Plant and Wenchong Shipyard were established at this stage. Before the Reform and Opening, Huangpu industrial zone had developed into a new industrial zone focusing on chemical industry and machinery.

Waterfront industrial heritage in Huangpu zone mainly includes modern shipbuilding sites and modern ports, most of which are still in use. The renewal of industrial heritage in this area will become an opportunity to recover the serious environmental pollution in industrial areas and the inadequacy of supporting services in nearby living areas. For example, Huangpu Port will be transformed into an industrial heritage park to improve the regional ecological environment.

In general, the process of renewal and transformation in this region is slow, but in the future planning, the awareness of cultural relic protection, ecological environment restoration and overall planning combined with the surrounding cities is strong, which is quite satisfactory.



Fig 4-6 Distribution Map and Main Industrial Heritage in Huangpu Zone (Source: by author)

Tab 4-6 Main Waterfront Industrial Heritage and Potential Waterfront Industrial Heritage in Huangpu Zone (Source: by author)

No.	Type	Name	Built Year	Degree of Protection	Status Quo of Utilization	Land Use of the Surroundings
1	Industrial Heritage	Couper Shipyard	1845	Chinese Industrial Heritage (the 1 st batch);	In idle	Greenery, industry
2		Lushun Shipyard	1858	Municipality Historical Building (the 3 rd batch)	Still in use	Cultural relics, greenery
3		Wenchong Shipyard	1955	Municipality Historical Building (the 7 th batch)	Still in use	Urban village, farmland, waterworks
4		Huangpu Old Port	1960s	Municipality Historical Building (the 7 th batch)	Still in use	Industry

5		Yuzhu Shipyard	1960s	Municipality Historical Building (the 7 th batch)	In idle	Industry, office, common residential area
6	Potential Industrial Heritage	Old Shipyard	1980s	/	Renovated as Huangputan Creative Park in 2019	Creative park, residence, farmland

(6) Yuancun Zone

Yuancun zone is located on the south bank of the Pearl River Front Channel. It is a light industry area planned after the founding of the People's Republic of China, as Guangzhou urban space expanded eastward along the Pearl River. In the 1960s, a series of large-span factories with Soviet-style features, such as Southern Flour Mill, Guangzhou Chemical Fiber Factory and Guangdong Cannery, were built one after another. Since 2008, it has adjusted its industrial structure in accordance with the policy. Relying on its location advantage near Pearl River New Town and International Convention and Exhibition Center, and taking the Asian Games as an opportunity, it has developed the cultural industry. Many industrial parks have been successfully transformed into energetic creative parks, achieving good economic and social benefits. However, due to the rapid expansion of Guangzhou city, the construction of Guangzhou International Finance City leads to the fate of demolition of many parks. For example, the northern part of the Southern Flour Mill, which was transformed into Linjiang 507 Creative Park, was completely demolished, and the Redtory, which was transformed from Guangdong Cannery, is now waiting for demolition. The Pearl River Brewery on the south bank of the Pearl River has undergone a smooth transformation and utilization because it has been included in the development planning scope of Pazhou Area. Its functional planning integrating leisure, catering, exhibition and performance also forms a good interaction with the surrounding business office area, attracting a large number of tourists to visit. The renewal process of Yuancun zone shows the inadequacy of the protection of industrial heritage in the assessment of historical buildings and the fierce conflict between industrial heritage protection and urban development, but at the same time a relatively perfect solution is provided here.



Fig 4-7 Distribution Map and Main Industrial Heritage in Yuancun Zone (Source: by author)

Tab 4-7 Main Waterfront Industrial Heritage in Yuancun Zone (Source: by author)

No.	Name	Built Year	Degree of Protection	Status Quo of Utilization	Land Use of the Surroundings
1	Guangdong Cannery	1956	Municipality Historical Building (the 6 th batch)	Planned to be demolished and become site of the proposed Guangzhou International Finance City	Business office (to be built), residence, urban village, education
2	Southern Flour Mill	1960	District Cultural Relic Protection Unit	The north side has been largely demolished, and the south part of the waterfront is planned to be renovated as the Cantonese Opera Red Boat Pier	Business office (to be built), industry, residence
3	Pearl River Brewery	1985	Municipality Industrial Heritage (the 1 st batch)	Renovated as Patti Beer Culture and Art Zone in 2010	Business office

4.2 Main Characteristics of Guangzhou Waterfront Industrial Heritage

4.2.1 Industry Park: Isolated from the City

(1) City Scale: unsatisfying location condition and insufficient external public accessibility

The author reflects that there are three reasons for the lack of external public accessibility of Guangzhou waterfront industrial heritage. First of all, the urban waterfront is at the edge of the transition between water and land. From the urban hinterland to the waterfront is the end-type transportation, which has a congenital weakness in road traffic. As a result, the bus stops and bus lines near the industrial heritage of the riverside are far less than other urban public places. Moreover, although Guangzhou metro transportation network is relatively mature, it is difficult to be covered by the subway network due to the distance between the heritage and the city center. Most waterfront industrial heritage is still a long walking distance from the nearest subway station, and the bus connection still needs enhancement. Finally, the water transportation system of Guangzhou in the channels of the Pearl River has not been perfected, and most of the industrial heritage of the riverside cannot be reached by water public transportation.

Tab 4-8 Current Status of Public Transport Connection to the Waterfront Industrial Heritage in 6 Zones (Source: by author)










Name of Industrial Heritage	Name after Renewal	Minimum Walking Distance to Subway Station	Bus		Number of Water Bus Stop
			Number of Bus routes within 250m (Number of Lines Connect to Subway Station)	Number of Bus stops within 250m (Number of Lines Connect to Subway Station)	
Taikoo Warehouse &	Taikoo Warehouse Fashion Park	1km	4 (0)	0 (0)	0

Wharf					
Daganwei Warehouse	B.I.G. Art Park	1.9km	3 (0)	3 (0)	0
Guangzhou Overseas Chinese Sugar Factory	Guangzhou Tangren Cultural Center	1.3km	4 (0)	0 (0)	0
Wuxianmen Power Plant	Guangzhou Overseas Chinese Museum	0.4km	13 (0)	4 (0)	0
Lushun Shipyard	Relics of Lushun Shipyard	>5km	0 (0)	0 (0)	0
Pearl River Brewery	Patti Beer Culture and Art Zone	1.5km	2 (2)	2 (2)	0

(2) Urban Block Scale: Fracture of Spatial Fabric

In the scale of urban block, the land utilization around the waterfront industrial heritage in Guangzhou is mostly various types of residences, including the upscale enclosed residential communities in riverside, the old open residential area once used as the supportive facility for factories, and the urban villages with more chaotic environment. The original intention of the industrial buildings is mainly to serve the superhuman-scale industrial production, and its architectural scale, spatial direction and airtight walls are incompatible with the surrounding urban environment, which is mainly designed on human scale. Moreover, the urban arterial road planned along the river divides the waterfront into relatively independent plots, while the urban express arterial road is generally built around the industrial zone occupying a large urban plot, which is easy to further aggravate the problem of separation between the waterfront industrial heritage, the surrounding built environment and the waterfront space.

Tab 4-9 Typical Cases of Spatial Fabric of Guangzhou Waterfront Industrial Heritage (Source: by author)

Name	Problem	Satellite Image	Spatial Fabric Analysis
Taikoo Warehouse & Wharf	Dislocation with the fabric of upscale residential communities nearby; The road along the river cuts the link with the city		
Daban Warehouse	Dislocation with the fabric of urban villages nearby; Oversized and enclosed factory buildings; The road along the river cuts the link with the waterfront		
Xietonghe Machinery Factory	Dislocation with the fabric of urban villages nearby; Oversized and enclosed factory buildings; The road along the river cuts the link with the city		
Wuxianmen Power Plant	Enclosed factory buildings; Large commercial center and road cut the link with the city and the waterfront		
			

4.2.2 Industrial Heritage: with Integrity and Continuity

Guangzhou waterfront industrial heritage has diversity in degree of protection, built year and

recognized content, forming a relatively complete structure of industrial historical and cultural protection.

Tab 4-10 List of Guangzhou Waterfront Industrial Heritage (Source: by author)

Degree of Protection	No.	Name of Industrial Heritage	Built Year	Recognized Content
National Cultural Relic Protection Unit	1	British Snow Works	Early 20 th century	Guangzhou Shamian Architecture Group
	2	Guangdong Shimin Soil Factory	1907	Site of Guangdong Shimin Soil Factory
Chinese Industrial Heritage; Municipality Cultural Relic Protection Unit; Municipality Industrial Heritage	3	Couper Shipyard	1845	The ruins of Couper Shipyard
Chinese Industrial Heritage; Municipality Cultural Relic Protection Unit;	4	Taikoo Warehouse	1904-1933	Guangzhou Taikoo Wharf (White Shell); Site of Taikoo Warehouse
Chinese Industrial Heritage; Municipality Historical Building; Municipality Industrial Heritage	5	Site of Xietonghe Machinery Factory	1911	Site of Xietonghe Machinery Factory
Chinese Industrial Heritage; Municipality Historical Building	6	Changgang Oil Depot	1958	Changgang Road Oil Depot of Guangdong Petroleum Company
Municipality Cultural Relic Protection Unit; Municipality Historical Building; Municipality Industrial Heritage	7	Guangzhou Beverage Factory	1934	Site of Guangzhou Beverage Factory, wheat warehouse
Municipality Cultural Relic Protection Unit; Municipality Industrial Heritage	8	Wuxianmen Power Plant	1901	Site of Wuxianmen Power Plant
	9	Asiatic Longmai Warehouse	1906	Site of Asiatic Longmai

				Warehouse
Municipality Cultural Relic Protection Unit	10	Asiatic Huadi Warehouse	1906	Site of Asiatic Huadi Warehouse
	11	Zhadian Warehouse	1913	Site of Zhadian Warehouse
	12	Meifu Warehouse	1920	Site of Meifu Warehouse
	13	Riqing Warehouse	1921	Site of Riqing Warehouse
	14	Texaco oil Depot	1924	Site of Texaco oil Depot
	15	Daban Warehouse	1927-1934	Site of Daban Warehouse
Municipality Historical Building; Municipality Industrial Heritage	16	Lushun Shipyard	1858	Lushun Shipyard
Municipality Historical Building	17	Chengzhitang Warehouse	1925	Site of Chengzhitang Warehouse
	18	Guangzhou Paper Mill	1936	Big chimney, high-level warehouse, the pond and its revetment, sewage pump house, the No.1 coal bunker and the No.2 coal bunker of the site of Guangzhou Paper Mill
	19	Ship Repair Factory of the Fourth Maritime Engineering Bureau of the Ministry of Communications	1951	The site of Ship Repair Factory of the Fourth Maritime Engineering Bureau of the Ministry of Communications
	20	Daganwei Warehouse	1950s	The site of Daganwei Warehouse
	21	Guangzhou Overseas Chinese Sugar Factory	1955	The vaulted warehouse of Guangzhou Overseas Chinese Sugar Factory
	22	Wenchong Shipyard	1955	No.1 Shipyard and No.2 Shipyard

	23	Guangdong Cannery	1956	The refrigeration storage, packing warehouse and the station of Guangdong Cannery
	24	Yuzhu Shipyard	1960s	The Harbor basin, marine railway and waiting room of the shipyard
	25	Old Port of Huangpu	1960s	The steel sheet pile wharf and the No.6 warehouse
	26	Chenganwei Shipyard	1974	No.13-16 workshops and the launching chute
Traditional Architecture	27	Guangzhou Shipyard	1950s	The Shipyard and the slipway
Municipality Industrial Heritage	28	Pearl River Brewery	1985	Site of Pearl River Brewery
Guangzhou Water Heritage	29	Zengbu Water Plant	1908	Site of Zengbu Water Plant
District Cultural Relic Protection Unit	30	Southern Flour Mill	1960	The South reservoir area of Southern Flour Mill

In terms of degree of protection, Municipal Cultural Relic Protection Unit, Municipal Historical Building and Guangzhou Industrial Heritage are the main components of Guangzhou waterfront industrial heritage, and the rest are a few national and district registered cultural relic protection units. The difference between historical buildings and cultural relic buildings lies in that the renewal of historical buildings pays more attention to the whole process of protection, utilization and activation, which needs to be more related to modern life. The diverse protection levels of Guangzhou waterfront industrial heritage mean abundant possibilities for renewal and renovation.

In terms of the built year, Guangzhou's industry has developed dramatically and changed its development focus obviously in the late Qing Dynasty and the early Republic of China period, the Republic of China period and after the founding of the People's Republic of China. According to the statistical chart, the years of construction of the protected Guangzhou

waterfront old industrial zone are evenly distributed in these three historical stages, which shows that Guangzhou has good protection of the integrity of urban industrial development. However, it can be seen from the previous paragraphs that there are still lots of old industrial areas with a long history that have not been properly recognized and protected. It is a long way to go in the assessment of Guangzhou waterfront industry heritage.

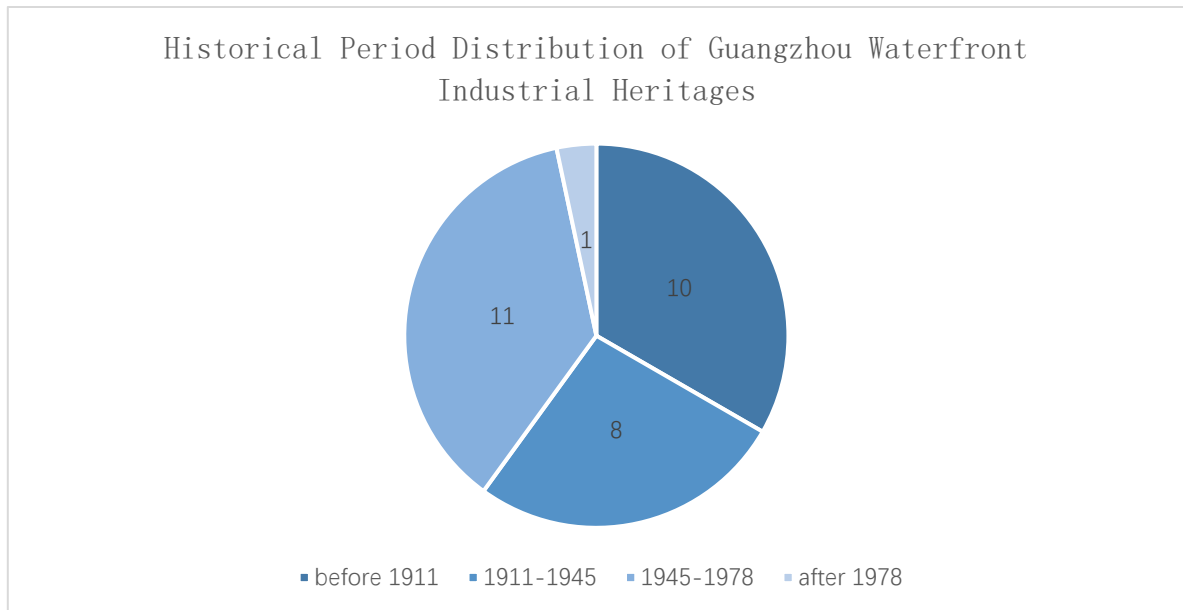


Fig 4-8 Historical Period Distribution Analysis (Source: by author)

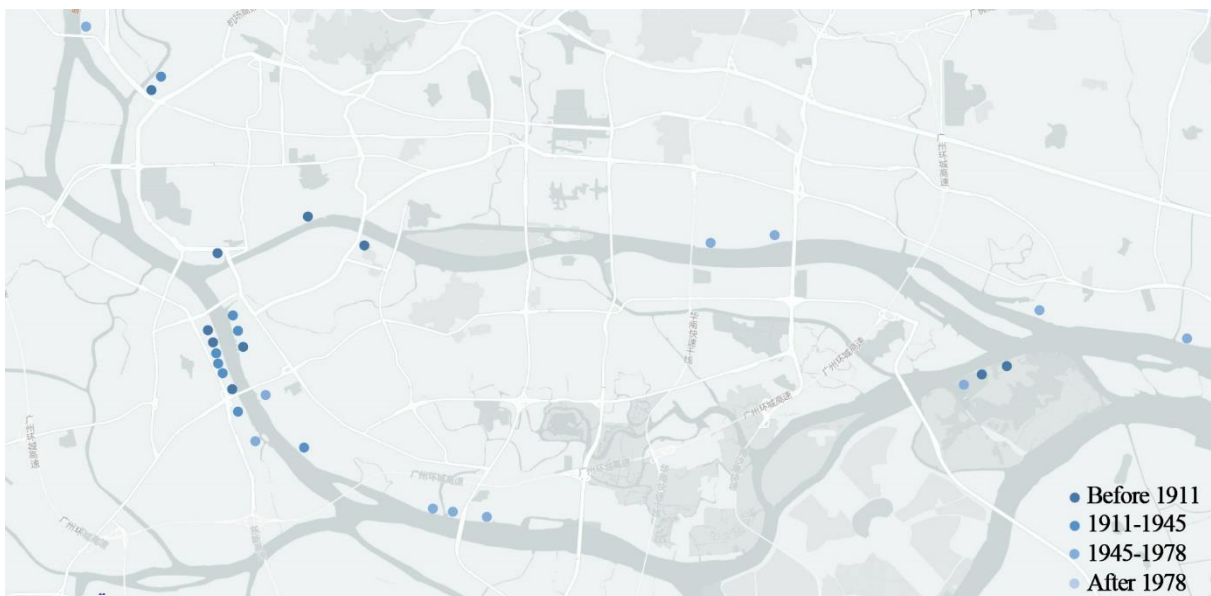


Fig 4-9 Geographical Distribution Analysis (Source: by author)

In terms of recognized content, the content covered by Guangzhou waterfront industrial heritage is relatively comprehensive. The main content is all kinds of warehouse buildings, such as Taikoo Warehouse, wheat warehouse in the Guangzhou Brewery site and the vaulted warehouse in Guangzhou Overseas Chinese Sugar Factory, followed by all kinds of industrial plants and industrial structures serving special production processes, such as chimney, cold storage, oil depot and slipway. Among them, Shipbuilding related workshops and shipyards account for the majority. It is worth mentioning that the outdoor natural environment and open space of specific parks have also been included in the scope of industrial heritage protection, which reflects that Guangzhou has a strong overall awareness of the protection and restoration of industrial heritage landscape.

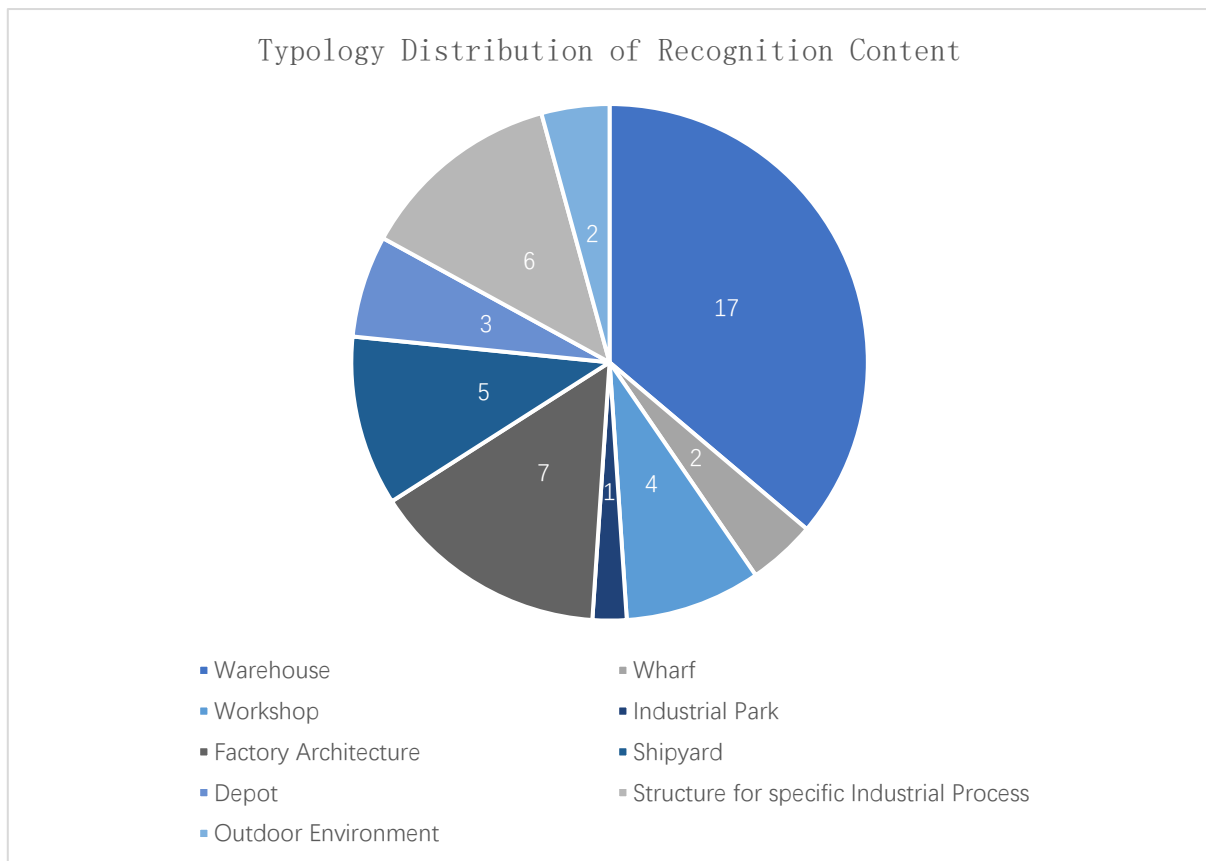


Fig 4-10 Typology Distribution of Guangzhou Waterfront Industrial Heritage Recognition Content (Source: by author)

4.2.3 Waterfront Open Space: Interactive Relationship with the Environment

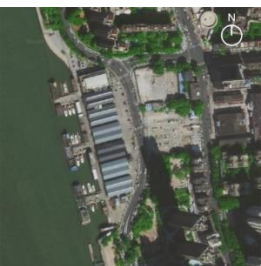
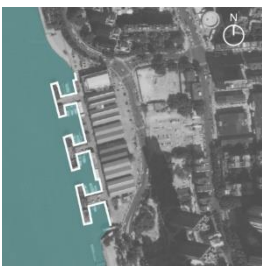




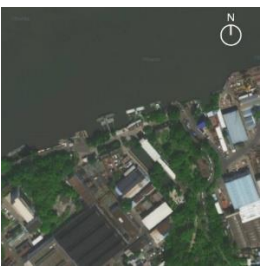



During the industrialization period, the functions of Guangzhou waterfront area were mainly dock for the manufacture and repair of ships, dock for supply ships and storage yard for temporary storage of goods, leaving the waterfront open spaces with abundant forms and ample area, which can be interpreted by the following three characteristics.



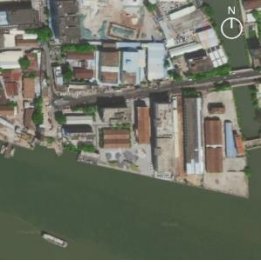

(1) Varied Bank Line

The existing bank lines of Guangzhou waterfront industrial heritage can be roughly divided into three types in horizontal form: protruding, concave and straight, while in section there are three types: vertical division, water diversion into land and oblique transition. Bank lines protruding towards the water are usually well-preserved historical wharfs, such as T-shaped wharfs at Taikoo Warehouse & Wharf and the Changgang Oil Depot. Rhythmical bank lines can create a more immersive historical atmosphere and hydrophile experience. Concave bank line types often had unique industrial uses, such as docks or slipways in shipbuilding. The concave and inclined slipway in Chenganwei Shipyard has the potential to become a hydrophilic space with industrial characteristics. Couper Shipyard has been transformed into a small pool by letting in water from the Pearl River, forming a distinctive industrial landscape. The straight shoreline type is usually formed due to the demolition of the old wharf. Compared with the two types of bank line above, this bank line shape is relatively simple.

Tab 4-11 Horizontal Morphology Types of Guangzhou Waterfront Industrial Heritage Bank


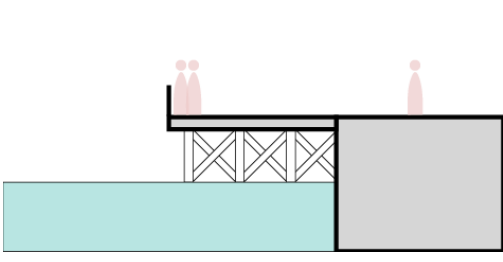

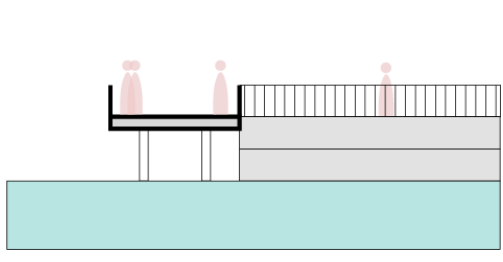

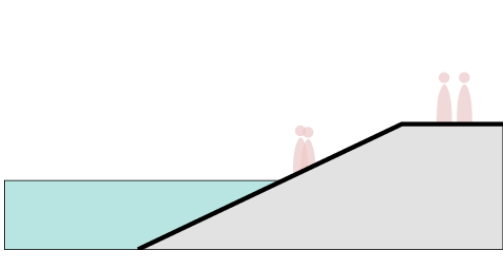
Line (Source: by author)

Waterfront Morphology	Industrial Heritage	Satellite Image	Waterfront Analysis Diagram
Protruding	Taikoo Warehouse & Wharf		
	Changgang Oil Depot		
Concave	Chenganwei Shipyard		
	Couper Shipyard		
	Lushun Shipyard		

Straight	Daban Warehouse (demolished wharf)		
	Daganwei Warehouse		

Tab 4-12 Section Morphology Types of Guangzhou Waterfront Industrial Heritage Bank Line

(Source: by author)

Waterfront Section	Industrial Heritage	Satellite Image	Waterfront Section Diagram
Straight	Taikoo Warehouse		
	Couper Dock		
Inclined	Chenganwei Shipyard		

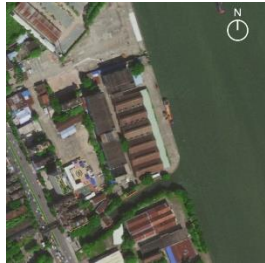

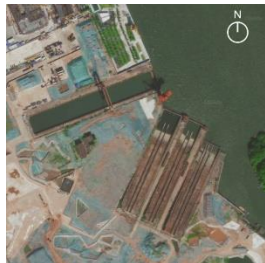




(2) Ample Waterfront Space

In order to adapt to the industrial use of accumulation and transportation, the open space between the industrial heritage and the waterfront has the characteristics of flat ground, regular shape and abundant area, which is conducive to the design of water interactive public facilities and activities in the renewal project. In addition, the waterfront open space of some old industrial zones is rich in green vegetation, which not only reflects the adaptability of the industrial park to the climate, but also provides ready green resources for renewal projects.

(3) Rich in Form of the Interface with Industrial Heritage

Most of the waterfront industrial heritages of Guangzhou are arranged along the bank line, but the buildings are at an angle with the bank line and the density of the architectural arrangement is different. The angle between the building and the waterfront enriches the interface form between the of the waterfront open space. In some industrial heritage parks, the industrial buildings surround the open space with the shape of a square, which provides an adaptive objective condition for the spatial connection between the waterfront open space and the industrial heritage.

Tab 4-13 Interface Morphology Types between Industrial Heritage and the Open Space in Guangzhou Waterfront Industrial Heritage Area (Source: by author)

Interface Type	Industrial Heritage	Satellite Image	Interface Analysis
Parallel	Zhadian Warehouse		
Angled	Guangzhou Shipyard		
Enclosed	Daganwei Warehouse		
			

4.3 Status Quo of Protection and Utilization of Guangzhou Waterfront Industrial Heritage

4.3.1 The Protection System

The institutionalized protection process of industrial heritage in Guangzhou consists of four steps: value assessment, identification, protection planning and measures formulation and activation utilization.

(1) Value Assessment

The value assessment of industrial heritage refers to a technical process in which professionals investigate, register and file various types of factories, enterprises, industrial buildings and other structures, conduct on-the-spot photography and mapping records, and study their industrial history, science and technology history and other historical materials to judge whether industrial heritage has value. With the development of science and technology and the enhancement of social awareness of respecting and protecting industrial heritage, Guangzhou has gradually refined the evaluation system of the value of waterfront industrial heritage in sense of history, science, art, society and humanity.

(2) Identification

In addition to the investigation, evaluation and research conclusions, the identification of protected industrial heritage is based on the value of the heritage, preservation status, combined with the consideration of its activation and utilization forms and protection costs, as well as the will of stakeholders. Industrial heritage can be identified as immovable cultural relics, historical buildings, buildings with traditional features and other different identities. ^[113] Identifying norms is actually an expression of the sense of value. ^[113]

In the process of identity assessment, the identification and approval process of historical buildings take a long time, which leads to many historical buildings involving multiple interests are prone to forced demolition. The *Guangzhou Measures for the Protection of Historic Buildings and Areas with Historical Features (Draft)*, adopted in 2013, has simplified the process for institutions and individuals to report potential historic buildings and for departments to initiate pre-protection, to some extent preventing the destruction of historic buildings.

In terms of protection identity, the protection identity of Guangzhou waterfront industrial heritage is mainly Municipal Cultural Relic Protection Units, District Cultural Relic Protection Units and Municipal Historical Buildings. In recent years, with the improvement of the whole society's awareness of industrial culture protection, Guangzhou continues to make beneficial

attempts in the protection and utilization of industrial heritage. In 2022, Guangzhou Bureau of Industry and Information Technology organized the identification of Guangzhou Industrial Heritage, and published the first batch of industrial heritage list at the end of the year ^[114]. Among the first 16 industrial heritage sites, 8 are located along the Pearl River.

(3) Protection Planning and Measures Formulation

The specific protection measures and planning for the industrial heritage with confirmed protection identity in Guangzhou are to delimit the protection range and construction control zone, determine the valuable parts to be protected and their protection methods, formulate control measures for the surrounding construction activities and put forward the requirements for the protection and remediation of the surrounding environment, so as to guide the activation utilization.

From the perspective of the protection mechanism, the protection and management of cultural relics are relatively strict. As a cultural relic protection unit, the preservation status of architectural heritage is in good condition, and the phenomenon of damage and demolition rarely occurs. However, the relatively strict protection of cultural relics has greatly restricted the activation and utilization of industrial heritage. For example, Baietan warehouse complex, except for Taikoo Warehouse which has been renovated, the rest are in idle and abandoned state. ^[53] The management mechanism of Municipal Historical Building is relatively flexible but lacks supervision, which is difficult to prevent the destruction of industrial heritage. For example, Guangdong Cannery, which was rated as the sixth batch of Municipal Historic Building, is still facing the fate of demolition due to the contradiction between it and urban development.

It is known that there are still large omissions in the existing protection mechanism, and Guangzhou Municipal Government is trying to improve the system. In 2022, the Executive Meeting of Guangzhou Municipal Government deliberated and passed the *Measures for the Management of Industrial Heritage in Guangzhou*, which is the first normative document of industrial heritage at prefecture level in the province. The document gives clear requirements

from the identification, protection, management and utilization of industrial heritage, aiming to further promote the standardization, institutionalization and normalization of the protection and utilization of industrial heritage.

(4) Activation and Utilization

The *Suppress the Second Industry and Develop the Third Industry* policy proposed in 2008, the *Three Old Transformation* policy proposed in 2009 and the urban renewal plan started in 2015 all have a great impact on the activation and utilization of the waterfront industrial heritage in Guangzhou.

In 2008, the Guangzhou Municipal government issued the *Opinions on Promoting the Suppress the Second Industry and Develop the Third Industry Policy in Urban Industries*, which required the revitalization of old urban areas, the optimization of spatial layout and the development of service industries, while encouraging the use of old industrial zones to run creative industries. In the same year, the *Measures for the Disposal of Industrial Land for Enterprises with Suppress the Second Industry and Develop the Third Industry Policy in Guangzhou Urban Areas* proposed to give priority to the long-term use of old factories for leasing or self-run creative industries, but all of them are temporary use functions. Later, if the land is expropriated by the government due to the needs of urban construction, unconditional cooperation is required. Under the joint guidance of the two documents, a large number of temporary cultural and creative industrial park type renovation activities have appeared in the waterfront old industrial area of Guangzhou.

In 2009, Guangzhou Municipal Government issued a programmatic document, *Opinions on Accelerating the transformation of the Three Old*. The original intention of the policy is to formulate a planning system according to the characteristics of old cities, old villages and old factories, and promote the state-owned land reconditioning and revitalizing the stock land. However, the policy's emphasis on material increment and the measures to place the responsibility of industrial heritage protection on enterprises, land acquisition and storage

institutions and other reconstruction parties are easy to lead to large-scale demolition and in the process of reconstruction, which puts great pressure on the protection of waterfront industrial heritage.

In 2015, *Measures for Urban Renewal of Guangzhou* was published to further improve the operation mechanism of Three old Transformation. Subsequently, the *Implementation Measures for the Renewal of Old Factory Buildings in Guangzhou* was issued, proposing two ways of comprehensive transformation and micro-transformation, and encouraging the adoption of micro-transformation for the renewal, which has played a good guiding role in the protection and transformation of the waterfront industrial heritage. The Fisherman's Wharf Innovative Community transformed from Luoxi Industrial Zone is a successful case. Through micro-transformation, the former industrial zone has become an urban complex integrating residence, leisure and business, realizing the pluralistic goal of public and diversified industrial heritage renewal.

In general, the protection system of Guangzhou waterfront industrial heritage is undergoing a self-improvement process from single goal to multiple goal, from economic benefit to comprehensive benefit, and from unchangeable to flexible, which reflects the overall social awareness of the value of industrial heritage and the awareness of protection.

4.3.2 Renewal Practice

(1) Renewal Drive: Dominated by Commercial Value

Urban waterfront area has great economic value because of its scarce natural landscape resources. It has already been pursued by all stakeholders of the society, and it is a natural place where tourism and commerce thrive. The early preferential and encouraging policies of the government for the reconstruction of old industrial plants and the development of creative industries reduced the cost of renewal activity under the model of cultural and creative park renewal. In addition to the property right, private capital also played an important role in the

early transformations of the waterfront industrial heritage. Due to the capital characteristic of private capital itself, the industrial heritage reconstruction projects which are developed and operated by private capital have the characteristics of paying too much attention to economic benefits.

Tab 4-14 Representative Renewal Models and Bodies of Guangzhou Waterfront Industrial Heritage (Source: by author)

Industrial Heritage Name	Renewed Time	Renewal Model	Name after Renewal	Transformation Body
Taikoo Warehouse & Wharf	2008	Comprehensive commercial development	Taikoo Warehouse Fashion Park	Guangzhou Port Authority and Guangzhou Port Group Co., Ltd
Guangdong Cannery	2009	Cultural creative park	The Redtory	Guangzhou Redtory Art Creativity Co., Ltd
Jinzhu Hydrogen Peroxide Plant	2009	Cultural creative park	1850 Creative Park	Guangzhou 1850 Creative Industry Investment Co., Ltd
Guangdong Water Conservancy and Hydropower Plant	2008	Cultural creative park	Xinyi Guild Hall	Guangdong Yuantian Engineering Company of Guangdong Construction Engineering Group and Guangdong Minghuiyuan Investment Management Co., Ltd

The transformation project of waterfront industrial heritage dominated by commercial value has caused many problems. Firstly, many cultural and creative parks constructed in the early stage blindly follow the same mode of government guidance and planning in renewal activities only to catch up with the policy dividend, lacking their own unique brand cultural symbols, and ignoring the interaction of resources and funds between the parks and the surrounding urban environment. It causes the homogeneity in different creative parks and the lack of industrial and local cultural characteristics. Secondly, the temporary nature of the *Suppress the Second Industry and Develop the Third Industry* policy of the old factory means that administrative

approval is absent from the statutory planning of land use, and the creative park is at risk of being demolished at any time, which has a great impact on the investors' business positioning and early investment, leading to the unmatched relations between actual construction and the statutory planning. When the operation of the creative park is not satisfactory after the renovation, such as the high vacancy rate of office space, investors will put more commercial functions into the park in order to recover funds rapidly, resulting in the overwhelming galleries, clothing stores, coffee shops, restaurants and other commercial forms in Guangzhou cultural and creative Industry Parks, where the industrial features become the background of commercial functions and its cultural and communal attributes are ignored. Both the Redtory and the Taikoo Warehouse & Wharf have experienced the process of increasing commercialization. Finally, when the retained old industrial zone conflicts with the development plan of the city or the investors to implement higher economic benefits, it will be easily abandoned. The southern area of Southern Flour Mill and the Redtory are facing demolition due to the conflict with the construction of Guangzhou International Finance City, besides, the former Xicun Power Plant was demolished due to the contradiction with the surrounding residential functions.

(2) Characteristics of Protection: A Strong Sense of Spontaneity

Although the renewal of Guangzhou waterfront industrial heritage dominated by commercial value has induced the planning change of the heritage after transformation, which is different from the original intention, many cases are still worthy of affirmation for their proactive behavior of spontaneously protecting and renewing the industrial heritage without industrial heritage identification in the process of transformation. For example, in the first phase of the Taikoo Warehouse renewal project led by Guangzhou Port Group Co., Ltd, the cultural relics of Taikoo Warehouse were repaired in accordance with the principle of Restoring the Old as the Old, which greatly improved the structural quality and state of the old warehouse. The Original Element Creative Park, which was renovated from the Guangzhou Beverage Factory, retains the historical and natural environment such as ancient trees. The protection and utilization of

Chenganwei Shipyard, Daganwei Warehouse and Zhujiang Brewery were all carried out before the identity of industrial heritage was recognized, and the industrial historical evolution of the park has been thoroughly investigated and studied, and the industrial historical features have been fully respected in the process of renewal. All of them reflect the strong protection consciousness to industrial heritages of the reconstruction bodies.

(3) Characteristic of Function Arrangement: from Privatization to Public Ownership

Due to the guidance of the early reconstruction policies, the most realized renewal projects of waterfront industrial heritage are the cultural creative park dominated by the cultural creative office and the cultural commercial park dominated by leisure and entertainment functions. There is a certain integration and overlap between these two models. The cultural and commercial functions are mainly for young office workers and high consumption groups, unconsciously rejecting the entry and use of citizens of other age groups and consumption levels, causing problems of privatization of urban industrial heritage and the waterfront space.

With the change of policy orientation and the attitude of the reconstruction bodies, dominated by private capital, towards the industrial heritage renewal, in recent years, there have been cases of transforming the waterfront industrial heritage into hotels, exhibition halls, stadiums and kindergartens to serve more types of social groups. On the whole, the designed function arrangement in waterfront industrial heritage renewal projects have become increasingly public and daily.

(4) Characteristic of Intangible Culture Value Transmission: Vary in Different Industrial Type

The industry types of Guangzhou waterfront industrial heritage are mainly warehousing, shipbuilding and light industry. Among them, the productive industrial heritage is more flexible and interesting in the intangible culture display and transmission method, which can vividly show the production history of the factory to the public through the immersive experience of

retaining the industrial structure related to production activities, reproducing the production process and implanting new functions related to history, so as to realize the continuity of the site history. For example, the renovation project of Pearl River Beer Museum and Patti Beer Culture Creative Park maintains the production line of Pearl River Brewery and establishes an interactive relationship between beer production history and modern nightlife, while Guangzhou Shipyard's renovation plan is to build a shipyard industry museum based on the remaining shipyards and slipways.

However, because the cognition of storage heritage value of the society is still low, there are obvious deficiencies in the transmission of its historical culture. From the perspective of urban space, storage and transportation space is often regarded as negative space because it is located at the edge of the city with relatively blocked traffic and space. Moreover, compared with production industries, traditional warehousing activities are regarded as unskilled ancillary labor. These reasons lead to the society's neglect of the historical and cultural value of warehousing industrial heritage.^[73] Objectively speaking, the historical and cultural display methods of the waterfront warehouse heritage are relatively limited. At present, passive methods such as historical information display boards and cultural sculptures are mainly used, which are difficult to arouse the enthusiasm of citizens and achieve the purpose of transmitting and popularizing the industrial history and culture of the city to the public.

(5) Regional Characteristic: Lack of Continuity

Guangzhou waterfront industrial heritage is centrally distributed in Baietan Zone. Most of the industrial heritage have the characteristics of small plots and low developable intensity. If integrative renovation can be carried out, the land use efficiency of the industrial heritage along the river can be better improved, the industrial transformation can be promoted, urban public service facilities along the river can be refined, and a more harmonious and complete waterfront industrial landscape can be formed. Lots of published urban development and regional plans, such as *Haizhu District Zoning Plan (2015-2030)* and *Baietan Regional Development Plan*

(2020-2035), have proposed the suggestion on water transportation construction and the integrated development mode. However, the current situation is still dominated by single renewal and transformation, which is not optimistic. In addition, the functional linkage between the renewal of waterfront industrial heritage and the urban hinterland is also obviously insufficient.

4.4 Summary

This chapter first reviews the evolution of the relationship between waterfront space and the city of Guangzhou, as well as the historical formation and current distribution of six waterfront industrial heritage zones, among which Baietan zone is the most concentrated distribution area of Guangzhou waterfront industrial heritage, with various types of renewal activities and relatively typical problems. Secondly, the author further sorted out and analyzed the current characteristics of the industrial park, industrial heritage and waterfront open space, and concluded that the industrial parks have common problems of poor external accessibility and rupture with the surrounding urban space fabric, the industrial heritage has good integrity and historical continuity, and the waterfront open space also forms an interactive relationship with the surrounding natural and industrial environment. Finally, through the analysis and induction of the protection system and the renewal practices of waterfront industrial heritage renewals, it is found that the protection system for Guangzhou waterfront industrial heritage is changing from single-goal directed to multiple-goal directed, from the orientation of economic interests to the orientation of comprehensive interests. In the realized renewal practices, although there is a forward-looking sense of the physical protection of waterfront industrial heritage, the phenomenon of over-commercialization and privatization still exists because of the excessive pursuit of commercial value by the transformation bodies. The lack of value cognition of warehouse industrial heritage in the society leads to the lack of historical continuity in the renewal of this kind of waterfront industrial heritage. These two reasons together lead to the lack of publicness of Guangzhou waterfront industrial heritage.

Among them, the Taikoo Warehouse & Wharf Area in Baietan zone has very representative warehouse and wharf space in terms of spatial characteristics, which is also a typical renewal case of following the comprehensive development model of culture and commerce in early Guangzhou. At present, waterfront space and industrial heritage are too commercialized and privatized. As an important warehouse heritage, it also has many deficiencies in the transmission of history and culture. Therefore, this paper will take Taikoo Warehouse & Wharf Area as a representative case of various issues concerning the renewal of Guangzhou waterfront industrial heritage, conduct a more detailed investigation on it and propose renewal strategies based on the concept of publicness.

Chapter 5 Status Quo of Publicness of Guangzhou Taikoo Warehouse & Wharf Area

5.1 Overview

Located in Baietan industrial heritage zone, Taikoo Warehouse & Wharf Area is an important representative of the historical industrial development along the Pearl River. In 2008, it is evaluated as the Guangzhou Municipal Cultural Relics Protection Unit. In 2007, the first phase of renewal project is committed to the Taikoo Warehouses, aiming to transform it into a cultural business park, and become the cultural business card of Guangzhou. However, as the erosion of commercialization gradually happened, currently problem exist in the Taikoo W&W Area to some extent. Recently, it is released the second phase of the renewal project. More commercial and office space are planned on the reconstruction plot on the east side of the Taikoo Warehouses. The important industrial heritage is brought to the public's field of vision again. Therefore, this project will conduct online and field research on the current situation of Taikoo W&W Area and its surrounding areas, survey from seven dimensions of the overall location, the historical formation and value of the site itself, the population background, the traffic, facilities and landscape of the surrounding area, the content of two renewal projects, the internal space and external space utilization situation of the site, and crowd characteristics and subjective evaluation are conducted to tease out the status quo and the existing problems of the site, providing solid and foundation for the subsequent design strategy.

The methods of preliminary investigation are literature review, questionnaire survey, on-site interview and on-site observation. A total of 173 valid questionnaires were collected through the network and the distribution on site. In addition, the author made a field visit to Taikoo W&W Area on a working day and a holiday respectively, recorded the opening situation of the store and the hourly flow of people from 9 a.m. to 10 p.m., and conducted in-depth interviews with residents, tourists, managers and staffs on the site.

5.2 Preliminary Research

5.2.1 Location

Taikoo Warehouse & Wharf Area is located in the west riverside section of Haizhu District, Guangzhou City, Guangdong Province, China. It is located at No. 124, Gexin Road, Haizhu District, with Pearl River in the west. The site is cut by Huandao Road. Along the river, On the south and north sides are parts of Guangzhou Volunteer Park, while on the east are large enclosed communities mainly. Besides, Taikoo area is situated in the center of waterfront industrial heritage belt in the back channel of Pearl River, and is one of the important cultural hubs of industrial heritage.

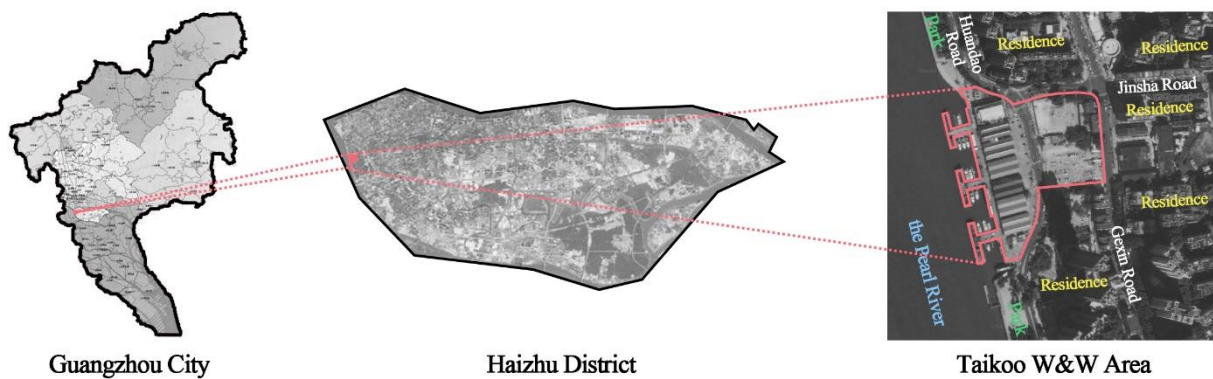


Fig 5-1 Location Analysis (Source: by author)

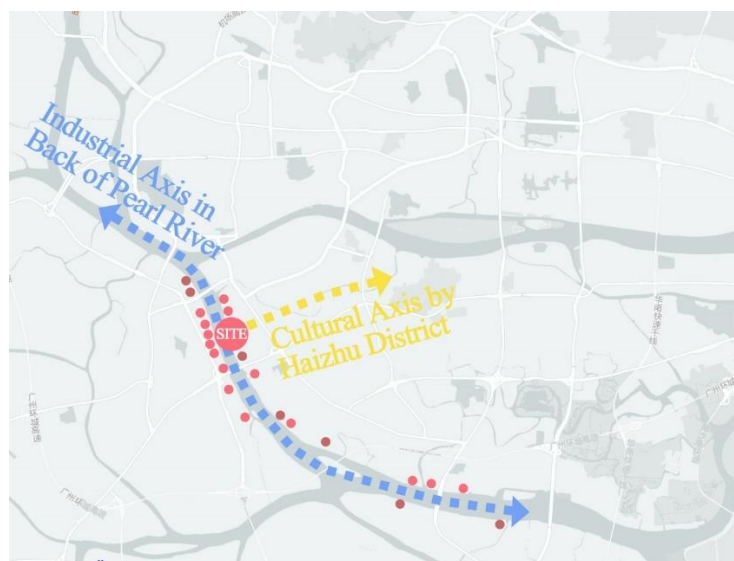


Fig 5-2 Political Location Condition Analysis (Source: by author)

5.2.2 History and Culture

(1) Historical development

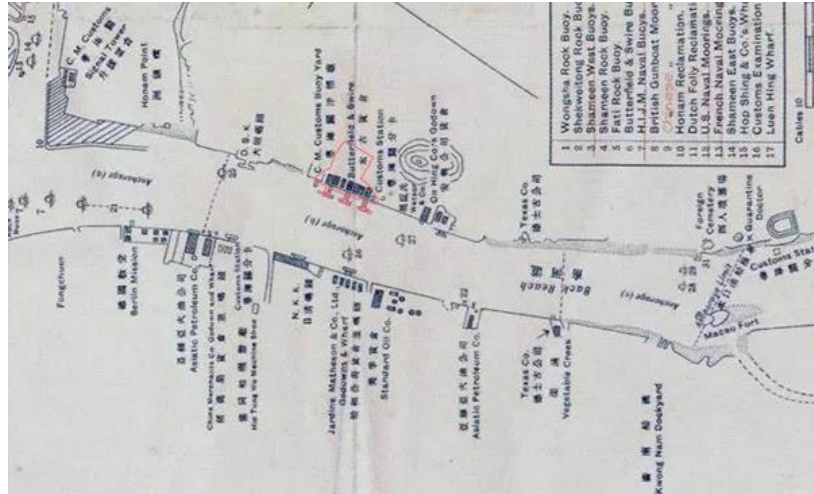


Fig 5-3 Map pf Taikoo Warehouses in History (Source: redrawn by the author, based on *Map of Guangzhou Port, 1934*)

Established in 1881, the Guangzhou Swire Branch grew rapidly in the 20th century, so did its warehousing business. In 1904, the Swire built a warehouse and a dock in the White Shell Zone of Guangzhou. In 1906, another dock and 4 warehouses were built. In 1907, another dock was constructed. Due to the advanced design of warehouses and docks, ships only need to stay in Guangzhou for a few hours before continuing its journal to the next destination ^[115]. In 1912, Swire expanded the construction of wharf and warehouse to manage larger volume of business.

After the World War I, various imperialist countries resumed and began to expand their shipping business in Guangdong, and the expansion of wharves and warehouses was realized. In the early 1920s, the Taikoo Warehouse continued to build several warehouses part of which were dedicated to cotton storage. The remaining connected warehouses were used to store various types of import and export goods. After regeneration, the original three docks have become one large dock and two small docks, which could accommodate four cargo ships at the same time. In Guangzhou at that time, Taikoo Warehouse & Wharf was a relatively complete

warehouse and wharf complex.

In the 1930s, the increasing business led to a shortage of space in the Taikoo Warehouse. As a result, Swire built another three-story warehouse on the north side. The expansion made Swire's business more prosperous. So far, Taikoo Warehouse has a total of 20 warehouses, each of which can hold 5,000 to 6,000 tons of goods. Besides, Taikoo Warehouse also stores a large number of merchants' deposits of oil, peanuts, grain, sugar and other foodstuffs.

During the War of Resistance against Japanese Aggression, a warehouse was bombed by Japanese planes. After the war, the Guangzhou Military Control Commission requisitioned all the properties of the British Swire Shipping Company in Guangzhou, including wharves, warehouses and buildings. Since then, Taikoo Warehouse & Wharf has been state-owned and managed by Guangzhou Port Group. In the late 1950s, the Taikoo wharf was the busiest in the inner port of Guangzhou.

In 1965, Guangzhou Port officially became a port open to the outside world, and Taikoo Warehouse & Wharf has become a Class A national port, which has made great contributions to the domestic and foreign trade of Guangzhou. Unfortunately, a violent dispute between the masses caused a fire and Warehouse No.8 was burned down accidentally.

In 1968, in response to Chairman Mao's call, educated young people took part in activities to travel to mountainous area and countryside. Taikoo Wharf became an important transportation node for sending Guangzhou educated young people to Zhanjiang and Hainan Province to participate in the construction.

Until the beginning of the 21st century, Taikoo Warehouse & Wharf has always been the national port open to the foreigner. As the city developed, the cargo transportation of Guangzhou Port has gradually moved eastward, and the cargo throughput of Taikoo Wharf has gradually decreased. In 2007, Taikoo Warehouse & Wharf completely stopped storage and shipping, and officially began to adjust for new functions.

Today, Taikoo Warehouse & Wharf Area has well-preserved industrial structures. The Site of Taikoo Warehouse & Wharf was awarded as one of the seventh batch of Municipal Cultural

Relic Protection Units in 2008. In 2019, Guangzhou Taikoo Warehouse & Wharf was included in the second batch of China Industrial Heritage Protection List.

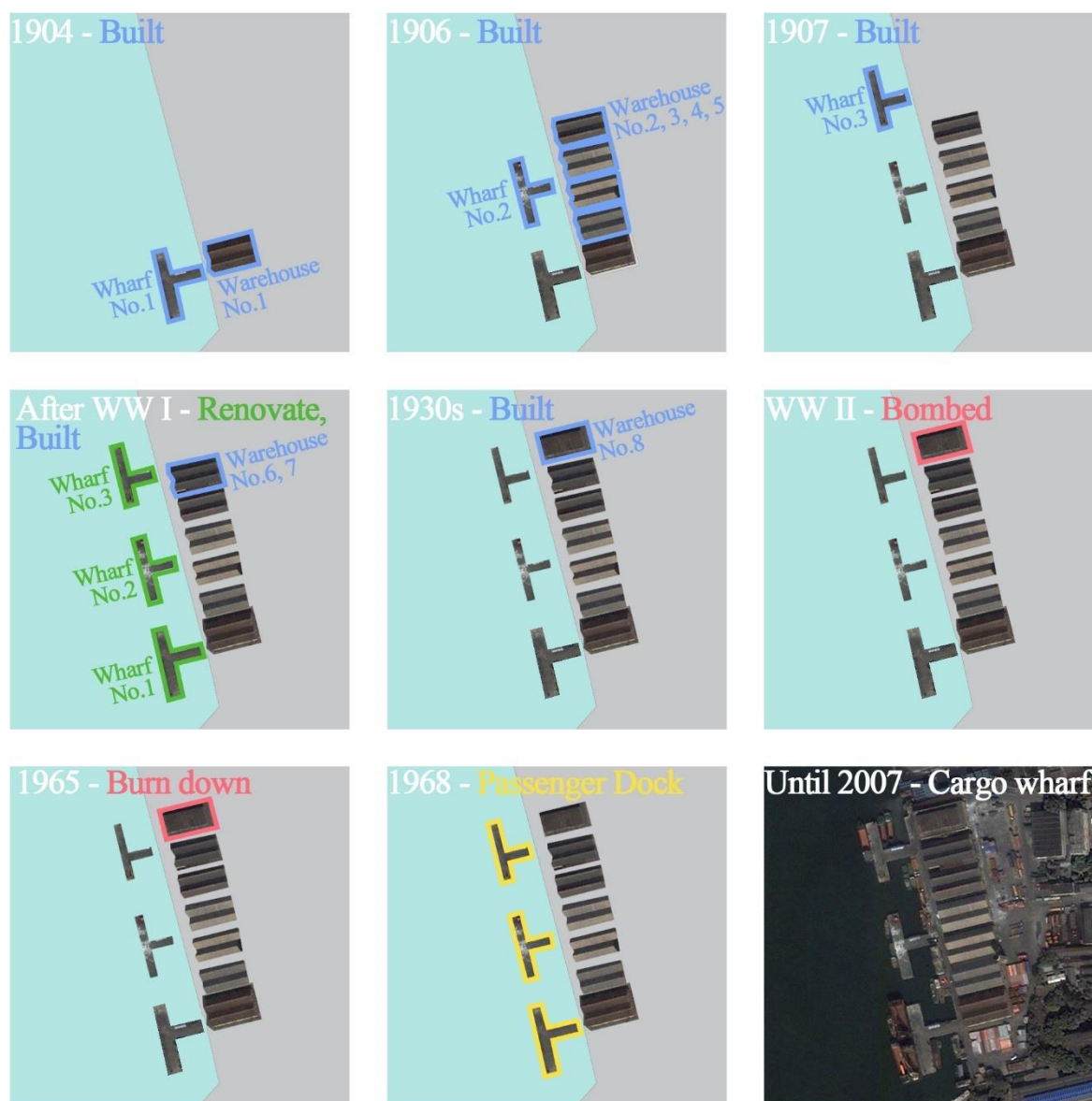


Fig 5-4 Diagram of Historical Construction and Events (Source: by author)

(2) Value Constitution

From the historical and cultural value of industrial heritage, Swire is one of the two leading British companies in Guangzhou shipping industry from the late 19th century to the early 20th century. Taikoo W&W Area not only witnessed the history of foreign capital entering Guangzhou in the Qing Dynasty and the early Republic of China period, inherited the foreign

maritime trade culture of modern Guangdong, accompanied the city of Guangzhou through the war and social and historical changes, but also made important contributions to the social and economic development of Guangzhou. It also embodies the hard and meaningful historical vicissitudes experienced by the ordinary people of Guangzhou, which is a real and precious city memory. As a witness, Taikoo Warehouse & Wharf is of high historical value to the research on the modern history of opening to the outside world of Guangzhou and even the whole country, the development history of modern industrial economy of Guangzhou and the history of concession and shipping of Guangzhou.

From the perspective of artistic value, Taikoo Warehouses are clearly influenced by modernist design thoughts. Although the building materials are still traditional red brick, the facade language is completely dominated by functionality, without decorative traces on doors, windows and exterior walls. The sense of desolation and vicissitudes in industrial heritage brings people the feeling of changing time, and the superhuman industrial structures construct the technical beauty. Taikoo Warehouse & Wharf Area possesses 7 English-style red brick warehouses, with ordered triangular trusses and heavy iron doors inside, a towering gray water tower and 3 T-shaped wharves supported by exposed concrete structures. The material and scale of these structures together tell people about the industrial history of the site, with high artistic appeal.



Fig 5-5 Original Industrial Structures (Source: Bibliography^[73])

In terms of economic value, the warehouse buildings and water towers in Taikoo Warehouse & Wharf Area are generally structurally sound and in good condition after the renovation in 2007.

The large-span warehouses have great potential for flexible transformation and reuse. After proper preservation, not only can the adaptive reuse save the main structure consumables and funds, but also shorten the construction period, realizing the economic value of industrial heritage buildings.

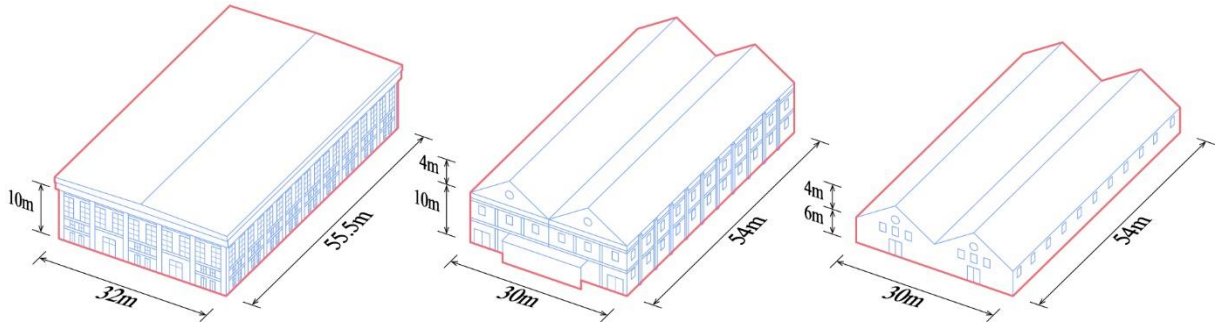


Fig 5-6 Dimensions of the Warehouses (Source: by author)

5.2.3 Population

Taikoo Warehouse & Wharf Area is subordinate to Longfeng Sub-district, Haizhu District, Guangzhou, with a total area of 2.38 km². According to the results of the 7th national census (2021), the population of the Sub-district is 97,000. The population density is 40,756 people /km². Compared with other sub-districts in Haizhu District, Longfeng has higher density of permanent residents, a smaller proportion of migrants, and a lower level of education. Similar to other old districts in Guangzhou, the population tends to be aging, with the registered population over 60 years old accounting for about 21% of the total registered population.



Fig 5-7 Population Characteristics of Longfeng Sub-district (Source: by author)

5.2.4 Status Quo of Traffic

(1) Vehicle circulation

The vehicle traffic system around the site is still incomplete. There is a lack of lateral connecting branches between Gexin Road and Huandao Road. The plots of Phase I and II renewal are separated by Huandao Road, and the T-junction formed by Jinsha Road and Huandao Road supports a large flow of people in ordinary times. The road level of the three roads is urban branch road. According to online data and field research, there is congestion in Huandao Road during the rush hour and dinner time, less traffic flow is found in the rest of the time. In the second phase renewal, a new east-west branch road will be added to connect Gexin Road and Huandao Road, expected to relieve the traffic pressure of two roads in the future.

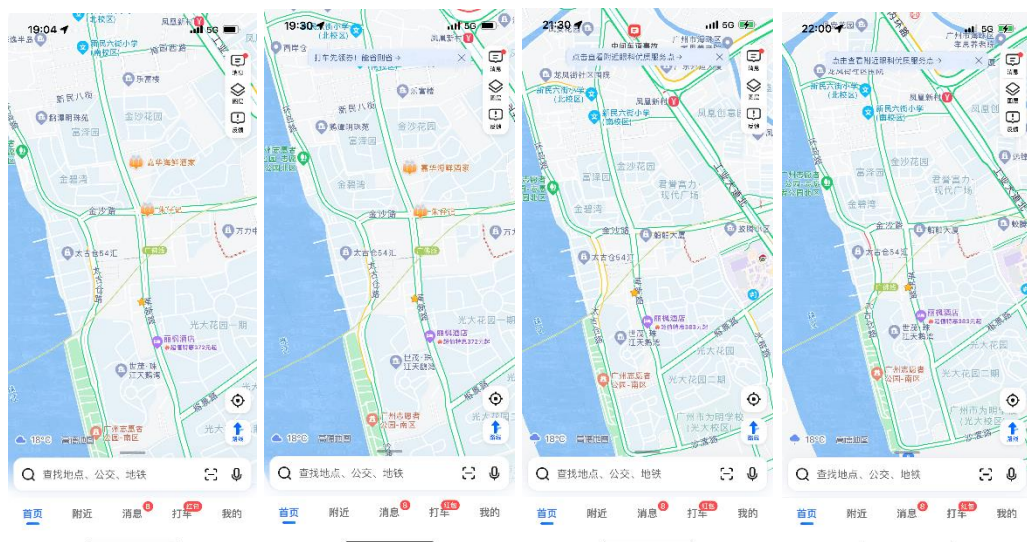


Fig 5-8 Online Traffic Situation in Different Time of the Day (Source: collected by author)

Regarding the parking lots, as a whole, the number of parking is far less than people's needs. The parking lot of Taikoo Warehouse & Wharf Area can park 112 cars. The open parking in east and north plazas of the waterfront area can accommodate 90 and 20 cars respectively. The entrances and exits of three car parks are all located on Huandao Road, causing greater traffic pressure.

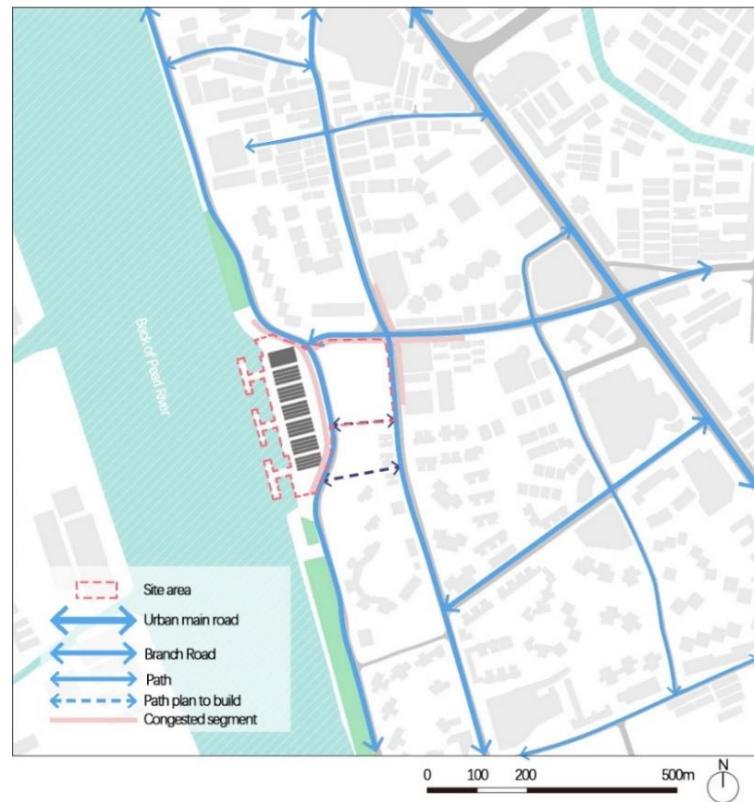


Fig 5-9 Vehicle Traffic Analysis (Source: by author)



Fig 5-10 Parking Area Analysis (Source: by author)

(2) Pedestrian circulation

The walking system in the surrounding area is mainly composed by the sidewalks on both sides of three roads. The surrounded residential blocks are enclosed residential communities, and the inner roads are closed to the public. The west side sidewalk of Huandao Road is part of the Greenway system.

The site is poorly accessible by public transport. Taikoo W&W Area is far from two metro stations by walking distance, and the bus stop connecting the metro station to Taikoo W&W Area still has a long walking distance to the site. Within 300m of walking distance there are two bus stops only, which are Taikoo W&W Stop and Taikoo Warehouse Stop, connecting to metro station and other urban areas by 4 bus lines. It is about 700-meter walking distance between Taikoo W&W Area and other 4 bus stops. The connection between various public transport needs to be improved.

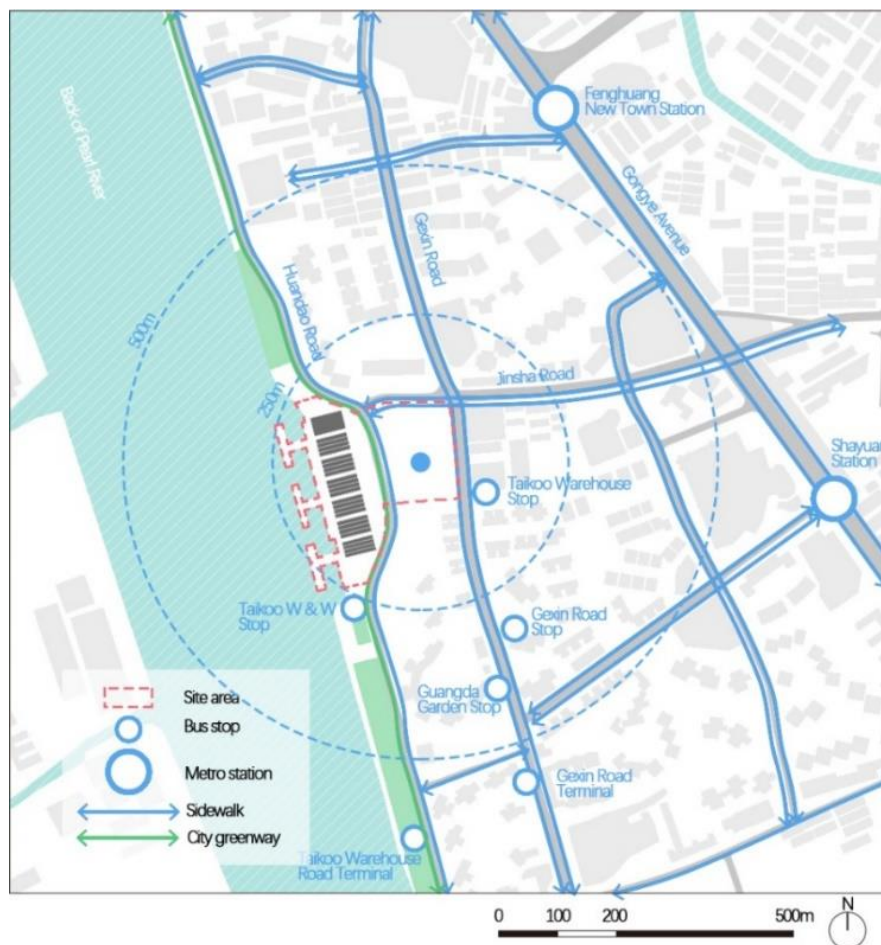


Fig 5-11 Pedestrian Circulation Analysis (Source: by author)

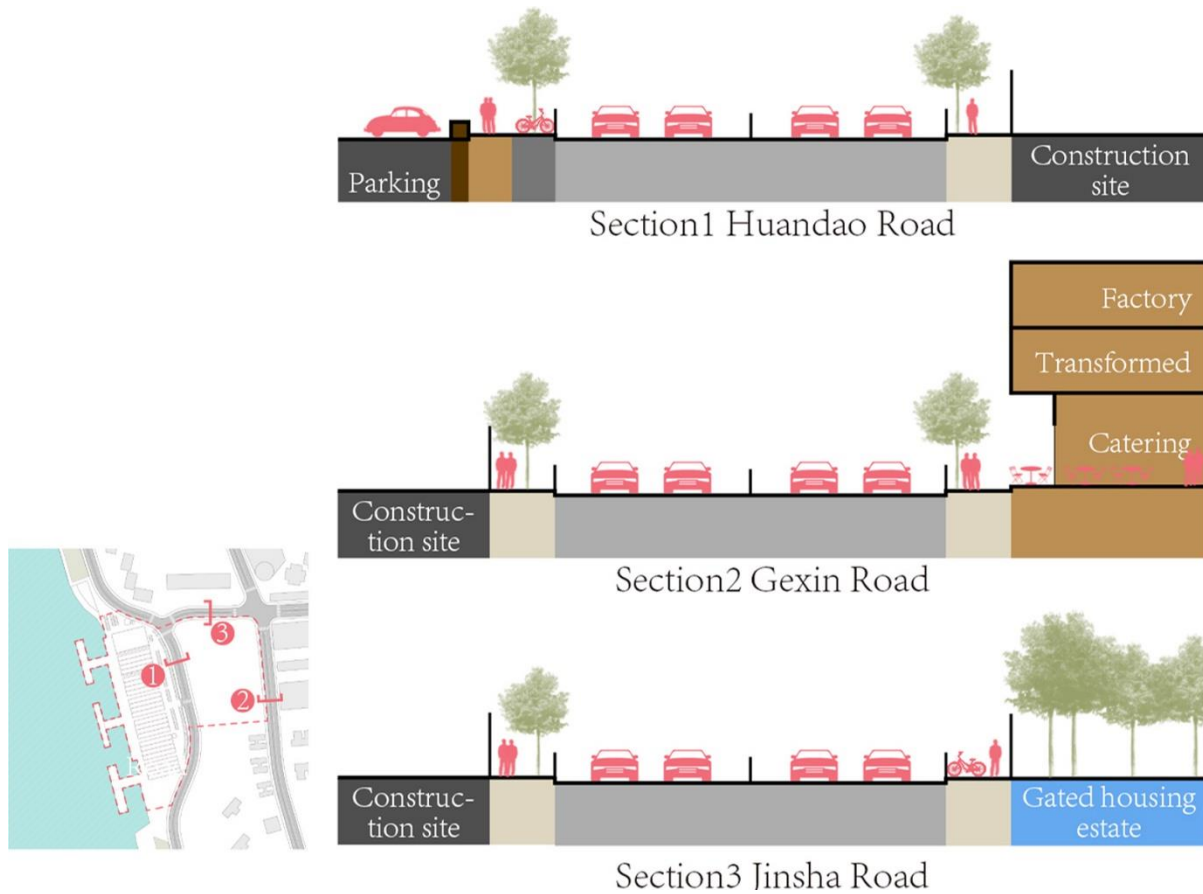


Fig 5-12 Main Road Section Analysis (Source: by author)

5.2.5 Status Quo of Facilities

In this part, the author mainly conducted a classified survey of residential facilities and public service facilities of the surroundings. In terms of residential facilities, the east side has a number of closed residential communities with high residential density. The waterfront area is mostly for newly built high-grade apartment towers with high building height and modern architectural style. In the area close to the inner city, there are more common and old residential communities that have longer history. In the northeast, the urban village has poor living environment.

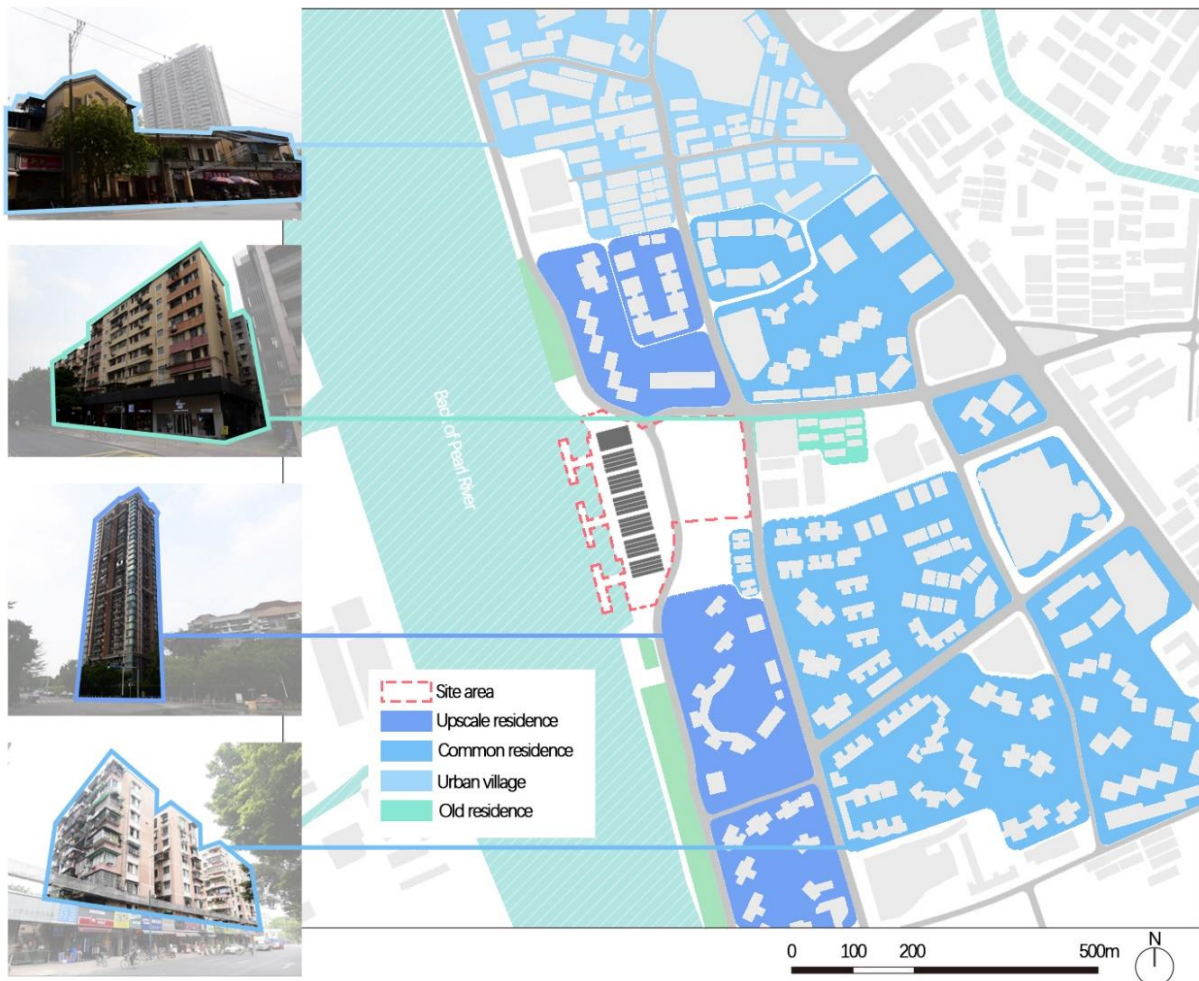


Fig 5-13 Living Facility Analysis of the Surrounding Area (Source: by author)

Regard to public facilities, the survey covers seven categories of services, and more attention is paid to the revival projects of waterfront industrial remains. Within walking distance of Taikoo W&W Area, the most widely distributed functions are catering and retails, which are distributed along the streets. The public cultural facilities near Taikoo W&W Area are of special industrial features, where transformed kindergarten, creative industrial parks, commercial complex, sports facilities could be found. Sports facilities near the site are diverse but insufficient. The waterfront park is passed through by the Greenway designed for bicycle. And there are several schools near the site. However, no community service facilities for the elderly and children are found nearby.

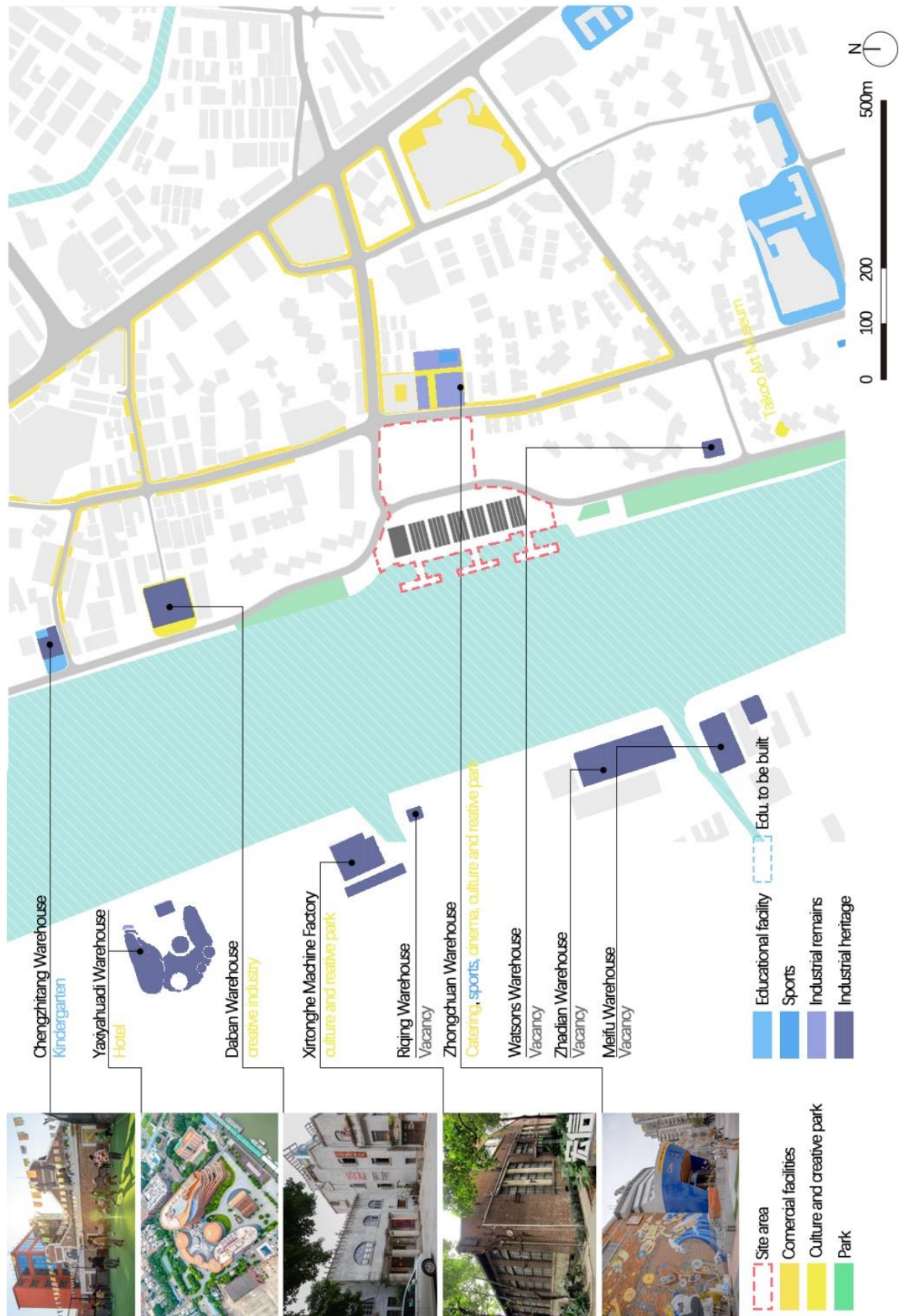


Fig5-14 of Public Service Analysis of the Surrounding Area (Source: by author)

5.2.7 Previous Renewals

(1) The first phase of renewal in 2007

The total area of the Taikoo Warehouse & Wharf project is 71236.1 m², including a land area of about 52,500 m². The waterfront of the wharf is 312m long, and the total construction area of the project is 39,599m². The wharf consists of three T-shaped trestle concrete piers and seven English-style warehouses, a bonded warehouse and an office building.

In 2007, in line with the adjustment of urban functional planning, Guangzhou Port Group invested in the renewal project of Taikoo Warehouse & Wharf Area and its surrounding environment. The design vision at that time was to build it into a waterfront leisure space and commercial cultural scenic spot integrating exhibition and trade, sightseeing, entertainment and cultural creativity functions, and become another city image card of Guangzhou City. An "urban living room" with unique cultural charm. On the basis of preserving the integrity, authenticity and historical connotation of the original wharf, an international wine exhibition and trade center would be introduced in Warehouse No.1 and No.2. Warehouse No.3 would be transformed into an exhibition center, which can host more formal activities such as antique auction, automobile, jewelry and painting exhibitions. Warehouse No.4 and No.5 will be reused as creative design offices while Warehouse No. 6 and No. 7 would house a cinema and the Rocky Western-style Restaurant, which are mainly operated by the original Provincial Film Company under the Zhuying Group. Warehouse No. 8, located in the northernmost part of the warehouse complex, would be transformed into a restaurant and the yacht club. Lastly, three T-shaped wharves were planned to be transformed into yacht marinas for the yacht club.

In order to meet the traffic needs of the new functions, the south and east plazas of the warehouses are used as open parking lots. The riverside green land at the north and south ends of Taikoo W&W Area is also carefully designed to integrate the site with the surrounding environment and form a continuous urban riverside landscape belt.

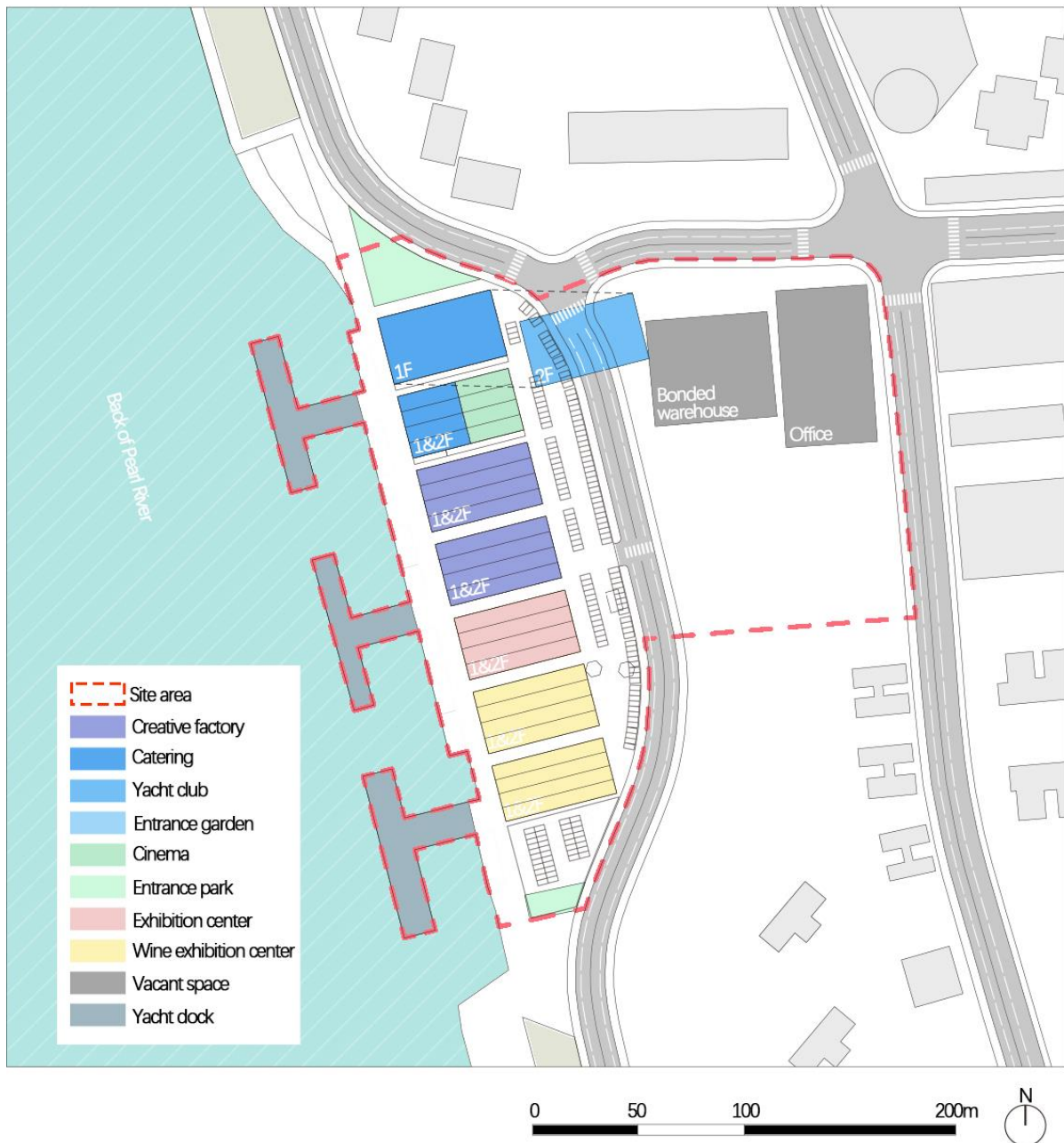


Fig 5-16 Schematic Diagram of the First Phase Renewal of Taikoo Warehouse & Wharf Area

(Source: drawn by author based on bibliography ^[116])

Guangzhou Port Group also carried out meticulous repair work on the old warehouse building of Taikoo W&W Area. The repair of the exterior of the warehouse, the reinforcement of the internal structure and the replacement of the internal functions all strictly followed the guiding principle of "restoring the old as the old". The original red brick walls of the warehouses have been retained, blinds on both sides of the warehouse walls have been replaced, and potted plants

have been added to windowsills on both sides of some of the warehouse facades. The heavy grey metal gates, sloping roof, tall and empty internal space, iron truss with the strong sense of order, and transparent glass skylight give the warehouses a unique industrial charm. The bonded warehouse and office building at the rear of the project will be retained for further renovation. [112]



Fig 5-17 Rendering of the First Phase Renewal Project (Source:

https://baike.so.com/gallery/list?ghid=first&pic_idx=2&eid=6162122&sid=6375344)

However, it can be seen that the initial planning in 2007 has a certain difference with the current situation in the area. The multi-business layout has gradually changed into a single mode focusing on the catering business, and the consumption level in the site has slightly decreased. The reason could be the low developable intensity, where the initial layout of multiple formats with high consumption level is difficult to meet the business objectives due to the lack of universality. Therefore, the operators added more and more restaurants in line with the preferences of young people by constructing temporary buildings along the river and transforming the original functions into catering.

Tab 5-1 Analysis of Function Area Change from 2007 to Present (Source: by author)

Function Types	Planned Area in 2007 (m ²)	Actual Area in 2022 (m ²)	Trend of Area Change (%)
Catering	2600	15390	+491.9%
Creative Office	6480	1230	-81.0%
Creative Retailing	0	1230	+100%

Exhibition Center	3240	0	-100%
International Wine Exhibition and Trade Center	6156	700	-88.6%
Cinema	1760	1760	0
Yacht Club	1760	880	-50.0%
Livehouse	0	1845	+100%
Total Area	21996	23035	+4.7%

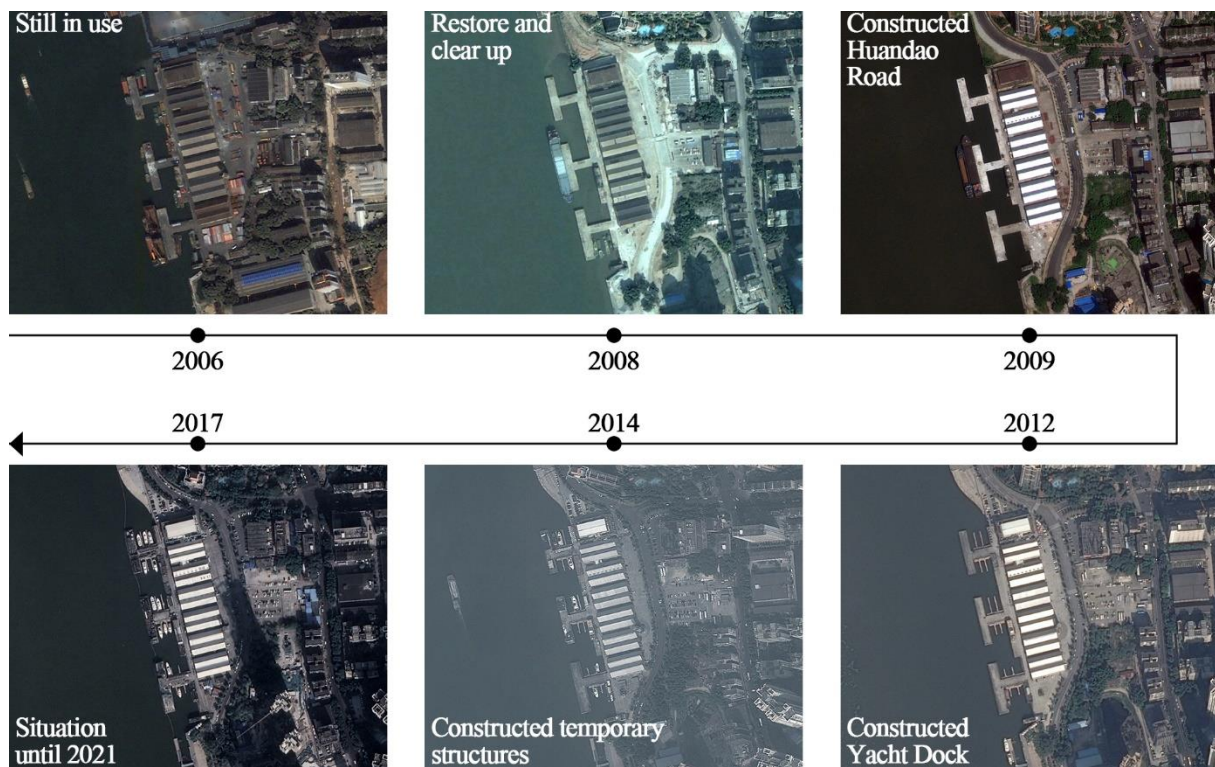


Fig 5-18 Spatial Evolution since the First Phase Renewal (Source: by author)

The current unitary business mode of Taikoo W&W Area, on the one hand, is difficult to provide rich and varied experiences for nearby residents and tourists, and blurs the cultural identity of the industrial heritage of the area. On the other hand, it also means poor anti-risk ability for the managers. Therefore, restoring the diversity of regional functions and further increasing the publicness of the region is effective to improve the current situation.

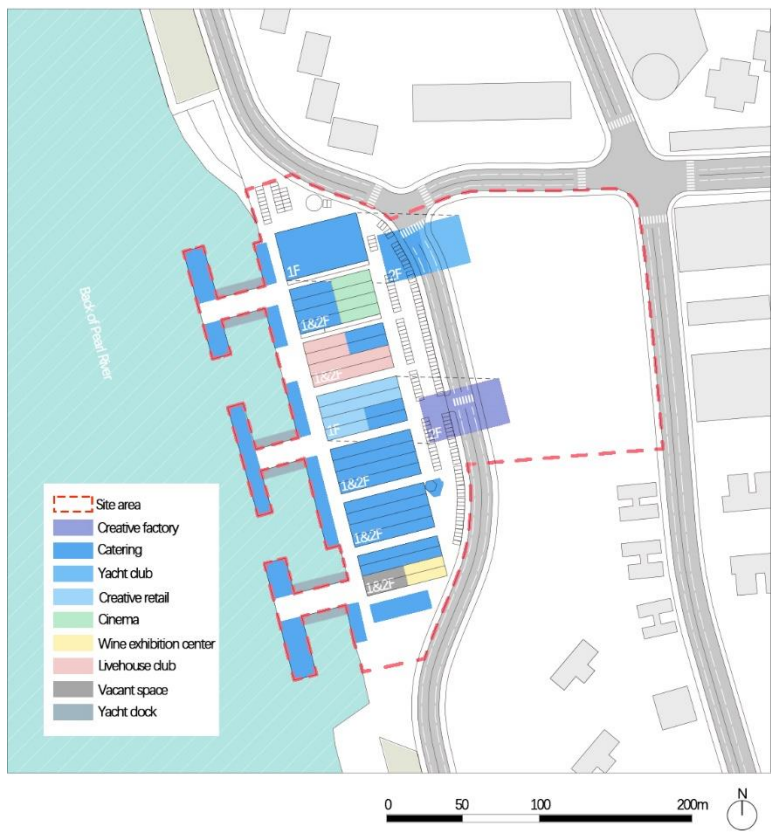
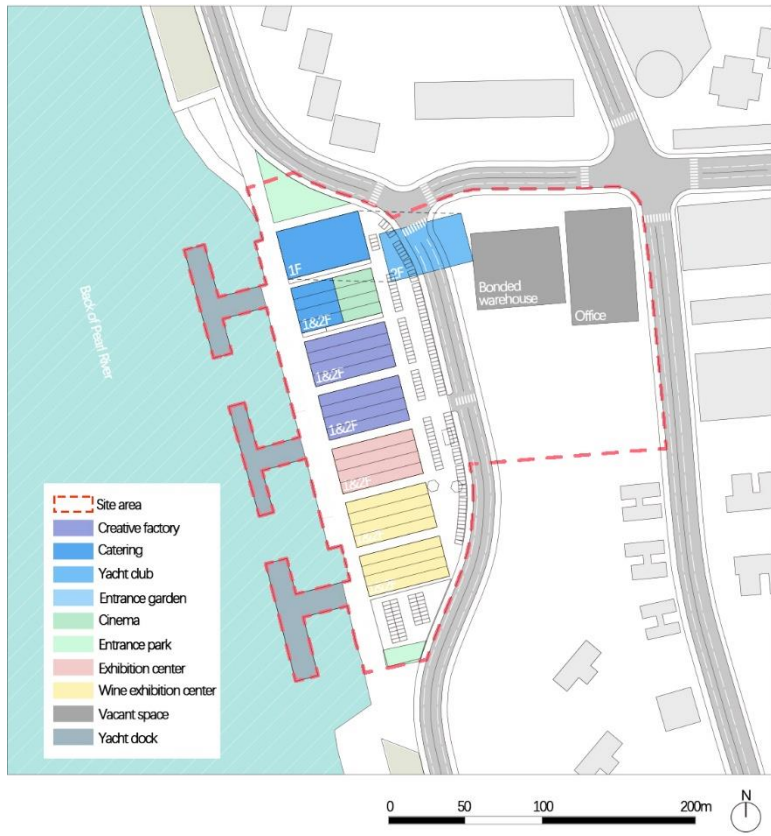
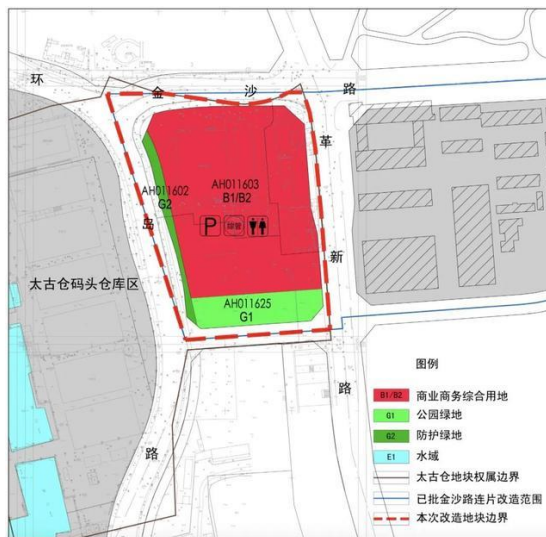


Fig 5-19 Function Distribution Change from 2007 to Present Analysis (Source: by author)

(2) The second phase of renewal since 2021

In November 2021, Guangzhou Public Resources Trading Center published the bidding announcement for the general contract of survey, design and construction of the renewal project of the old factory plot in Taikoo Warehouse Redevelopment Area.

According to the bidding announcement, the renewal project of the old factory plot in Taikoo Warehouse Reconstruction Area belongs to the second phase of the general Taikoo Warehouse & Wharf Area renewal project, which is located on the east side of the old warehouse area renovated in the first phase. Its specific location is No. 124, Gexin Road, Haizhu District, with Jinsha Road to the north, Huandao Road to the west, Gexin Road to the east and Tiwanwan Residential Community to the south. The project has a total site area of about 23,373 m², a buildable site area of 14,996 m², a gross floor area of about 85,000 m² and a calculated plot ratio area of 44,979 m². It is worth mentioning that the height limit of the project is stipulated, the height of the west side construction cannot exceed 24 meters, and 60-meter limit for the east side construction.



a) planning Legend



b) master plan

Fig 5-20 Plans of the Second Phase Renewal Project (Source:

<https://baijiahao.baidu.com/s?id=1717442947367263314&wfr=spider&for=pc>)

According to the plan, the second phase of the renewal will contain functions of business, small-scale commercial units, office, etc., connecting the business of Taikoo Warehouse on the west side, and is committed to creating the first world-class art and leisure landmark themed on port and wharf culture in Guangzhou. The business of this land is mainly for high consumption crowd. In terms of area allocation, the commercial building area is about 15,000-20,000 m², the office building area takes about 23,000-28,000 m², and the back office and public supporting facilities account for a total of about 3,000-4,000 m².

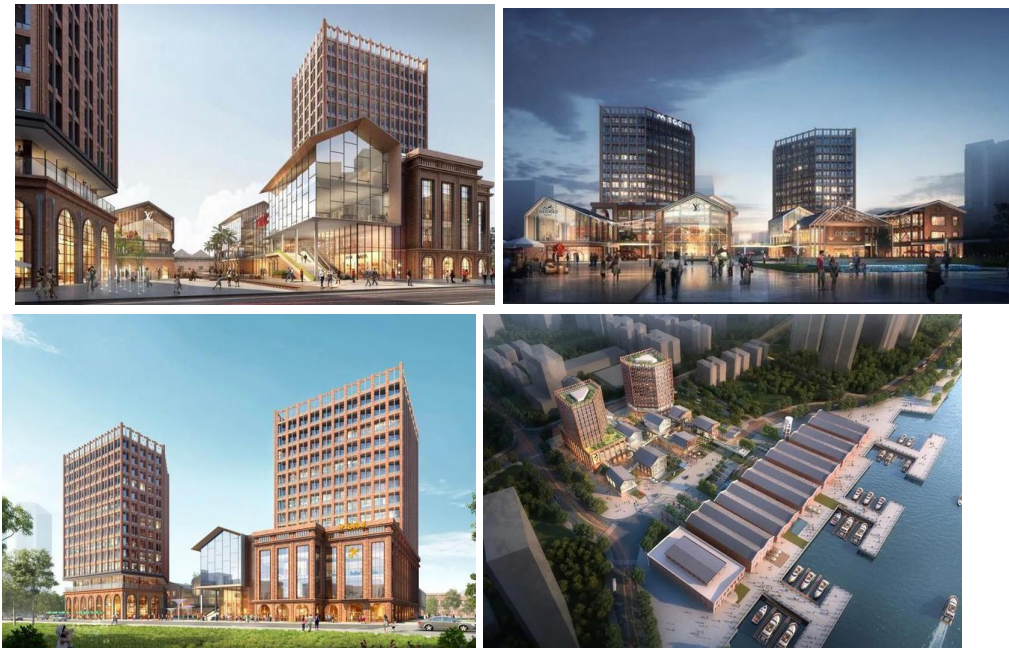
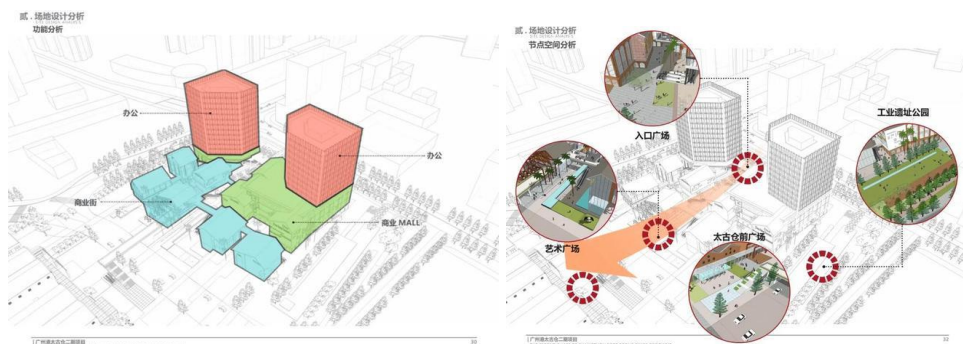


Fig 5-21 Renderings of the Second Phase Renewal (Source:

<https://baijiahao.baidu.com/s?id=1717442947367263314&wfr=spider&for=pc>)



a) function analysis diagram

b) spatial analysis on public nodes

Fig 5-22 Analytical Diagrams of the Second Phase Renewal (Source:

<https://baijiahao.baidu.com/s?id=1717442947367263314&wfr=spider&for=pc>)

In terms of function distribution, the second phase of the project will place the relatively low commercial street on the west side of the plot, which is similar to the Taikoo W&W Area, while the high office and hotel towers will be placed on the east side of the plot, whose podium building will be designed as a commercial complex. The commercial street is spread out along the east-west public axis, connecting the Entrance square, the Art square and the east square of Taikoo W&W in the first phase. With the help of the natural landscape design, the commercial space is intended to create a beautiful environment for pedestrians.

According to the satellite map and field research, so far, the bonded warehouses and office buildings that have been retained in the first phase of the renovation have been demolished, and the south area that used to be used as an open parking lot has been occupied by temporary workers' dormitories and office buildings. The new construction project is well underway.



Fig 5-23 Satellite Image of the Status Quo of Engineering (Source:

https://map.baidu.com/@12608148.365154246,2626544.419371328,18.33z/matype%3DB_EARTH_MAP)

Compared with the first-phase land parcel, the second-phase land parcel is more developable. The main purpose of the renovation project is to improve the overall commercial value of Taikoo Warehouse & Wharf Area by adding more office leasing and small-scale commercial

area. According to the plan, the connection between the second phase project and the first phase project lies in the continuity of high-end commercial functions, but it ignores all kinds of problems caused by the single business form and high consumption level of Taikoo Warehouse & Wharf Area. If it is constructed according to this plan, the existing problems of Taikoo Warehouse & Wharf Area and the negative impact on the normal life of surrounding residents will become more severe. In addition, in terms of space design, the second phase planning scheme only focuses on the landscape within the second phase plot and the old warehouse on the riverside, but did not take into account the industrial remains on the east side, resulting in a waste of cultural and landscape resources.

(3) Site reconstruction condition

Regulations on the protection of cultural relics of Taikoo Warehouse & Wharf

According to the document *Notice on the Protection Scope and Construction Control Zone of the 5th, 6th and 7th Batches of Cultural Relics Protection Units in Guangzhou*, the protection scope of Taikoo Warehouse and Wharf extends 5 meters towards the east, south, west and north from the outer edge of the cultural relics body, and the construction control zone extends 30 meters from the protection range.

According to the document, no other construction projects or excavation operations shall be carried out within the temporary protection areas of cultural relics protection units. When it is necessary, the security of the cultural relic protection units must be ensured and the approval and consent of government departments at various levels must be obtained. Within the temporary construction control zones, construction projects that directly or indirectly damage the landscape feature shall not be carried out. The height of new construction in the temporary construction control zone shall be controlled according to the following table in principle:

Tab 5-2 Height Restriction on New Buildings in Temporary Construction Control Zone

(Source: *Guangzhou Cultural Relics Protection Unit Management Requirements on Temporary Protection Scope and Temporary Construction Control Zone*)

Distance from the outer range of Protection zone	Buildable height
≤ 5	Green belt or preserve the environment
$> 5, \leq 20$	8
$> 20, \leq 30$	11

Construction restrictions and indicators of The Second Phase Renewal Project

The total land area is 23,373 m². The land use includes commercial and business, park green space and green buffer, among which the construction land area for commercial and business is 14,996 m². According to the urban renewal plan, the construction restriction of this plot is that the plot ratio should not exceed 3.0, the building density should not exceed 40%, and the greening rate should not be less than 20%. The height limit of the project is 24 meters on the west side and 60 meters on the east side.

In addition, since this plot is located in the old city of Guangzhou, and the surrounding Huandao Road, Jinsha Road and Gexin Road are 22-meter-wide urban branch roads, according to the regulations, construction projects with a height of less than 24 meters shall yield 5 meters to the red line of the road, and construction projects with a height between 24 and 60 meters shall yield 8 meters.

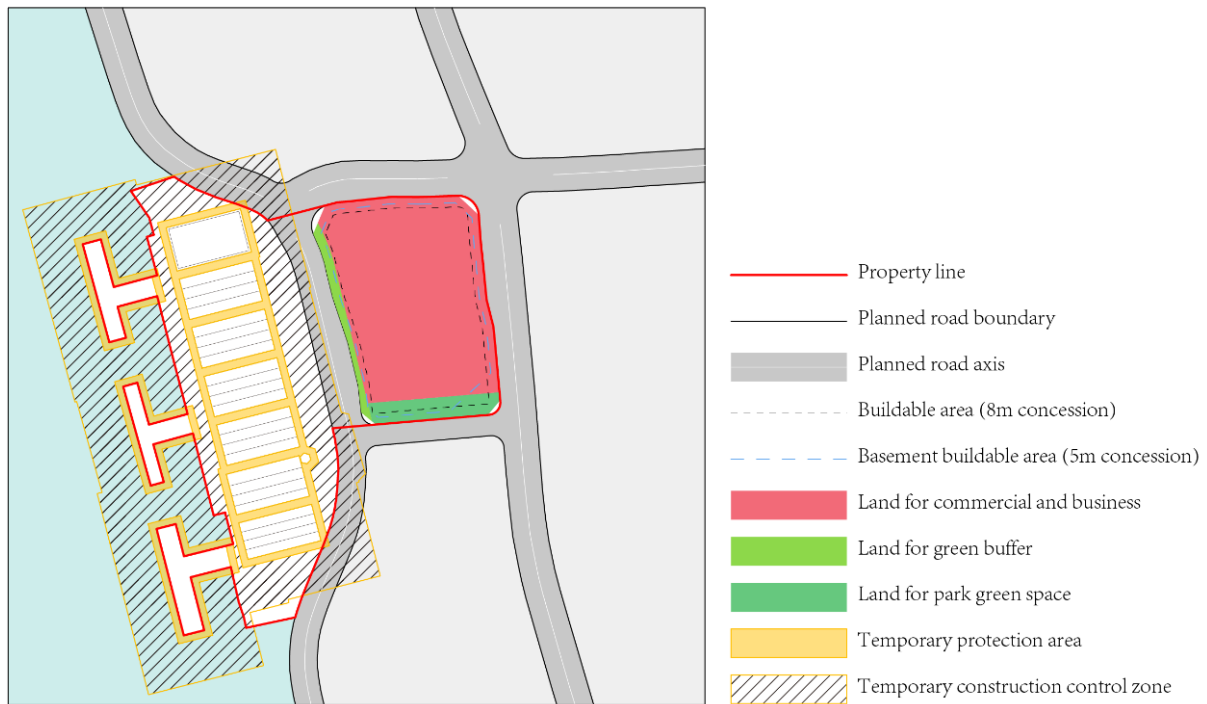


Fig 5-24 Analysis Diagram of Construction Condition (Source: by author)

(4) Summary

In general, the industrial heritage of Taikoo Warehouse & Wharf Area has a low developable intensity and is difficult to form a multi-mode pattern, but it needs multi-functional implantation to improve the current situation. The land parcel of the second phase renewal can be developed with high intensity, but it is difficult to improve the overall urban environmental quality of Taikoo W&W Area by independent planning. Therefore, if the existing problems of Taikoo W&W Area can be taken into account and the overall design of the phase I and Phase II plots can be carried out, it will be a better idea for the renewal process.

5.2.8 Status Quo of Utilization

(1) The interior

Compared with the renewal project in 2007, Taikoo W&W Area now is dominated by catering,

and citizens can only enter the indoor space by consuming. In addition to the International Wine Exhibition and Trade Centre, Warehouse No.1 also houses 2 restaurants and a bar, which has been suspended due to the pandemic. Warehouse No.2 is converted directly into 4 restaurants. Warehouse No.3, formerly an exhibition center, is now occupied by 2 restaurants. The second floor of Warehouse No.4 is still used as creative office, while the ground floor has been transformed into fashion shops, café and bar. However, most of the offices and shops are in a state of suspension. Half of Warehouse No.5 has been converted into a theatre space that can host live concerts, while the other half remains empty, with doors closed on the riverside side. Warehouses No.6 and 7 hold a cinema and the Rocky Restaurant, but after the opening of a new cinema nearby, fewer people come to the Taikoo Warehouse Cinema anymore. Warehouse No.8 has minimal functional changes and is still used by Tangyuan Restaurant and the Yacht Club, while the yacht club has high requirements on the economic level of the members. Only a handful of the visitors come for it. A cafe is built into the base of the water tower.



Fig 5-25 the Numbering of Taikoo Warehouses and Wharves (Source: by author)

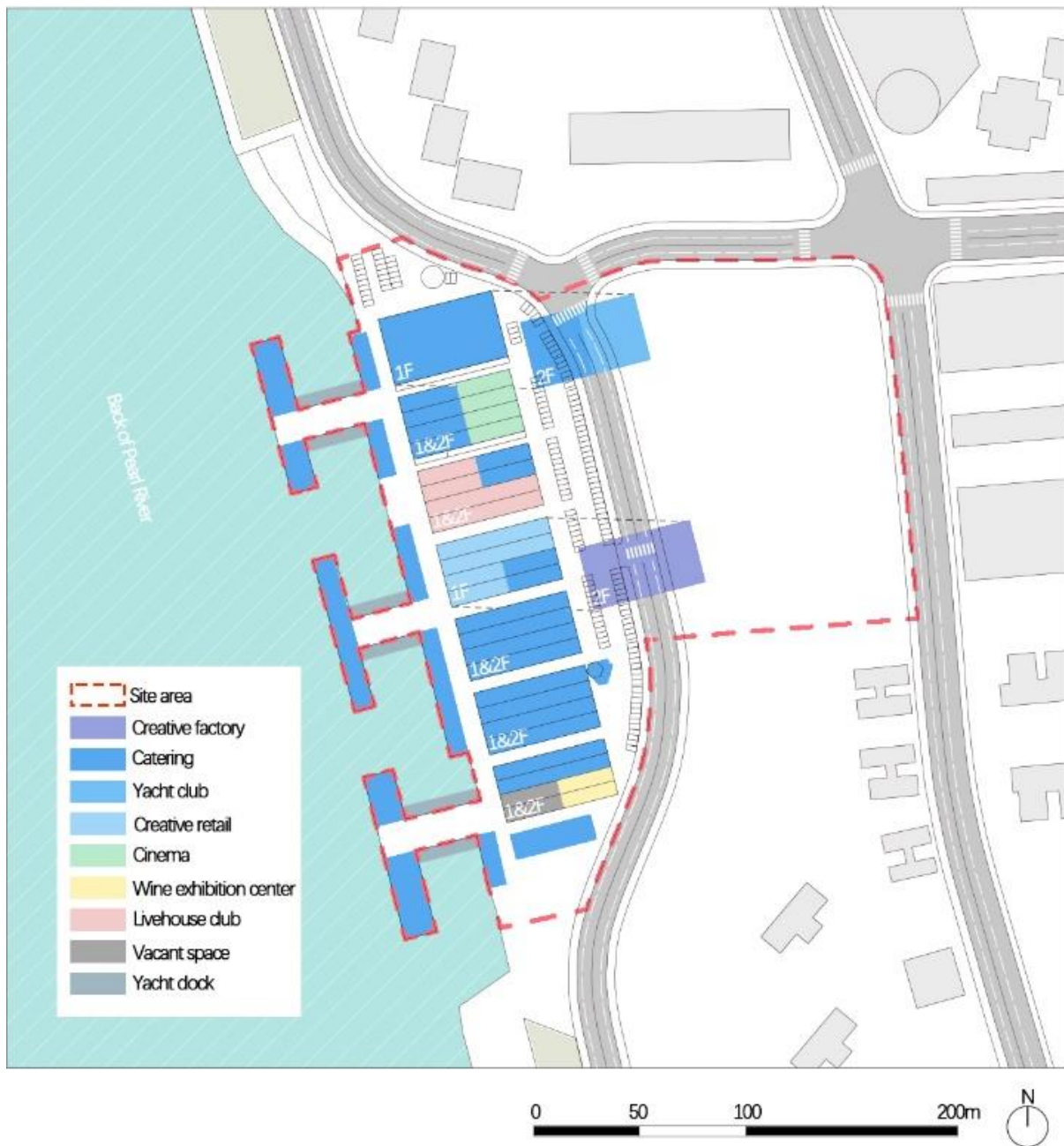


Fig 5-26 Function Analysis of the Interior of Warehouses (Source: by author)

In addition, the corridors between the warehouses, the promenade along the river and the three T-piers have new additions. Among them, between Warehouse No.8 and No.7, and between Warehouse No.7 and No.5, logistic staircases for the restaurants are added. Along the river promenade and on the pier, eight new temporary structures have been added to accommodate dining areas, including independently operated restaurants and dining areas along the river extended from restaurants in the warehouses. Customers can enjoy the river view from the

alfresco dining area.

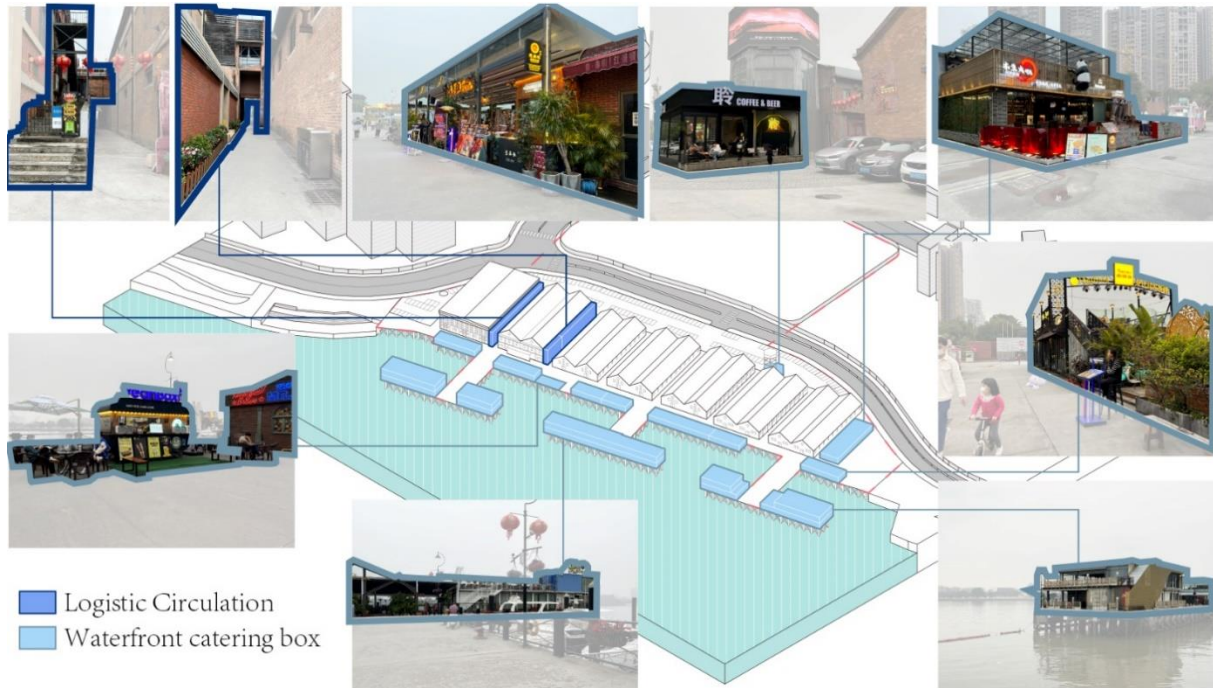


Fig 5-27 Additive Structure Analysis (Source: photo by author)

In terms of the interior of the warehouses, in order to improve the utilization rate, most of the tall factory spaces are transformed into double-layers. The dining room is mostly placed on the second floor, and the suspended ceiling is used to block the truss structure of the warehouse, which not only leads to the insufficient clearance height, giving people a sense of pressure, but also covers the industry identity of the warehouses.

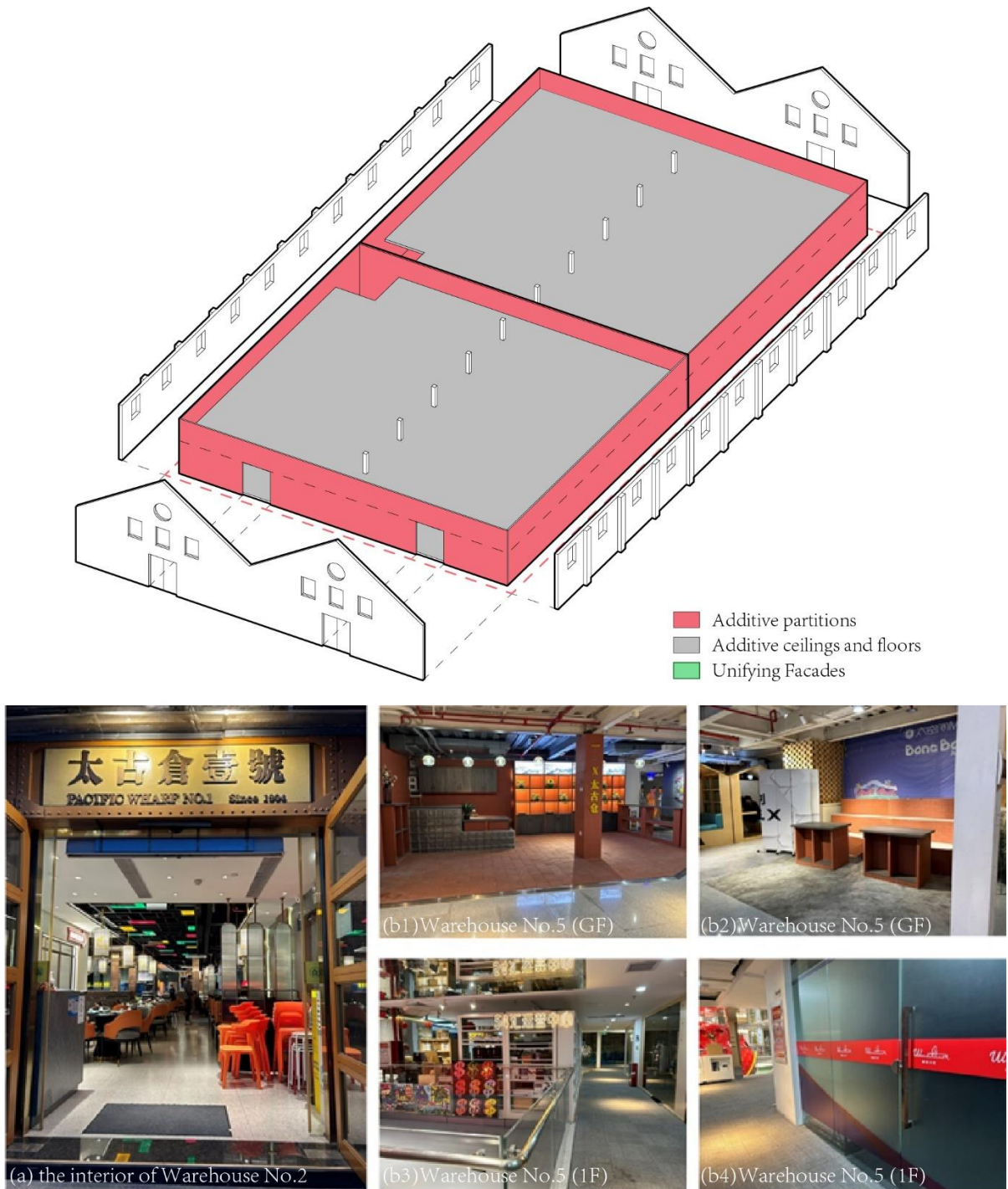


Fig 5-28 Current Utilization of the Interior of the Warehouses (Source: by author)

(2) The outdoor public space



Fig 5-29 Outdoor Public Space Analysis (Source: by author)

Space for walking

The walking system of Taikoo Warehouse & Wharf Area is mainly composed of the riverside promenade, the wharf squares, the corridors between warehouses, the sidewalks and the east square.

The riverside promenade and wharf squares are the busiest. The length of the promenade is about 300 m, which is within walking distance, while the width is about 8 m. In the daytime,

when the restaurants remain closed and people flow is small, the space is relatively generous. However, in the evening, when the restaurants are open, placing signs and plastic chairs outside, and with the large people flow, the promenade is slightly crowded. According to the on-site observation, during the daytime, trucks for waterfront restaurants would enter the riverside walk from the fire channel to unload, causing trouble to pedestrian safety.

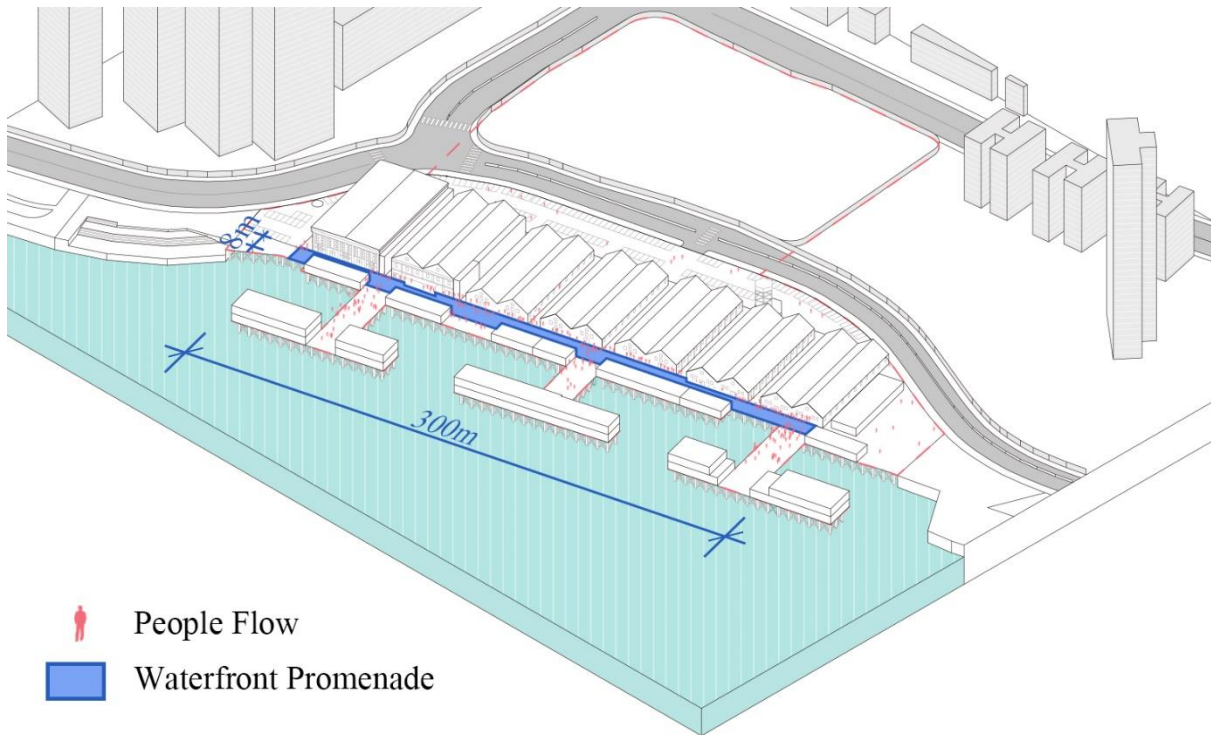


Fig 5-30 Waterfront Promenade Analysis (Source: by author)

The sidewalk along Huandao Road encircles Taikoo W&W Area. The sidewalk belongs to the Greenway system equipped with bike lanes and parking, so many bikes are parked in the north and east of Taikoo W&W Area. In addition, there is unnecessary height different between the sidewalk and Taikoo W&W Area, which makes the walking space more fragmented.

The corridors between the warehouses are relatively narrow, and the original cement floor is remained. Some of the corridors have a small area of green landscape design, but some are connected to the kitchens, where sewage flows across and the smell is bad. The lighting in the passageway space is generally dim at night.

A large part of the east square on the east side is used as the open parking lot, where exists the

phenomenon of mixed pedestrian and vehicle movement. Generally, pedestrians only walk in the narrow area near the warehouse. The sidewalks are occupied by lots of shared bikes parked indiscriminately, leading to poor experience for pedestrians.

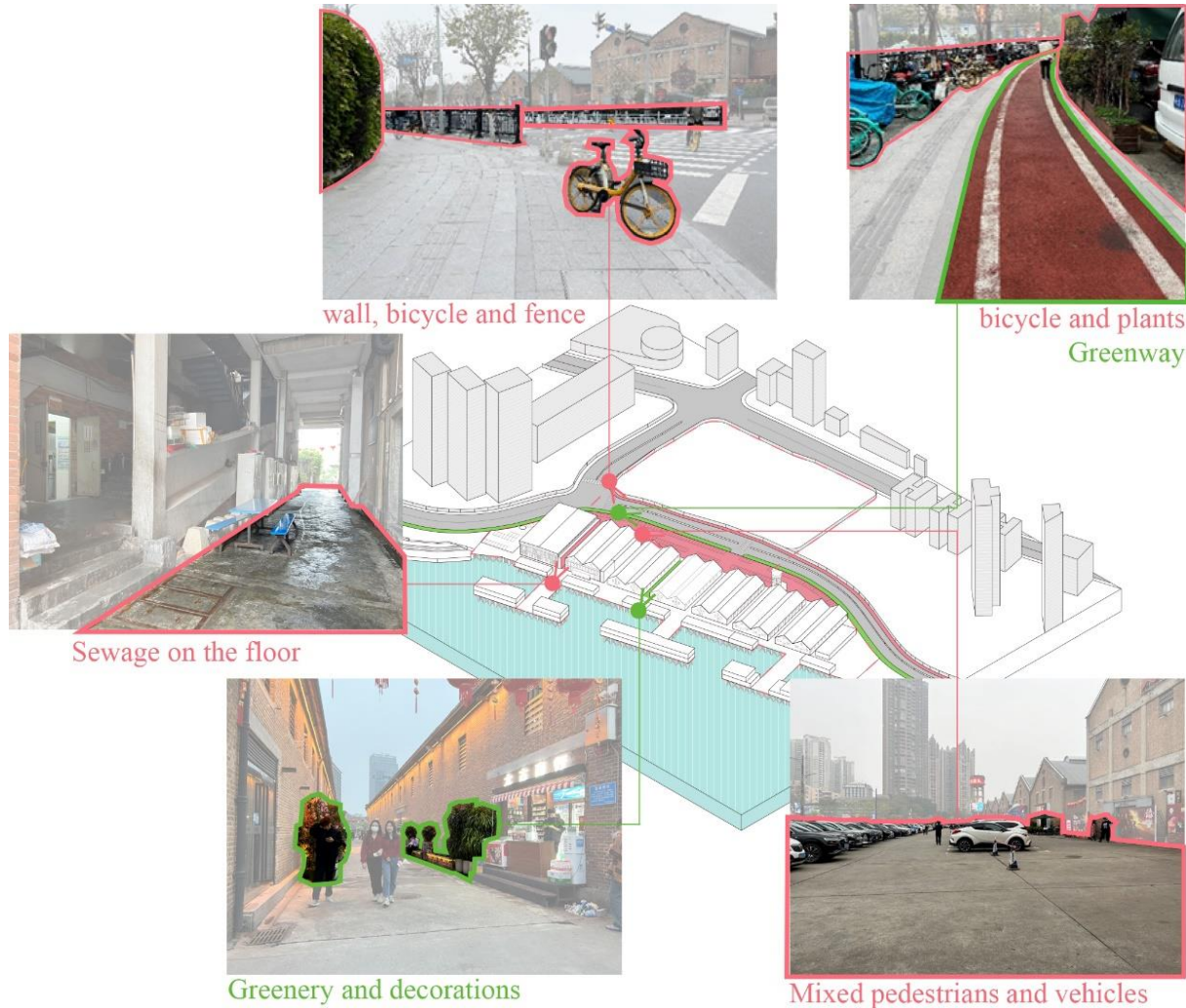


Fig 5-31 Current Situation of Sidewalks, Corridors and East Square (Source: photo by author)

Space for interaction with water

The water-interaction space of Taikoo Warehouse & Wharf Area is composed by the wharf squares and the riverside walk, most of which are occupied by temporary structures such as restaurants and ice cream trucks block the view to the river, giving people the spatial feeling of an urban commercial street. A large number of yachts parked on the shore cover a large area of the water surface. Moreover, the height difference between the bank level and the water surface

is large, resulting in a lack of visual, auditory and tactile interaction with water in this area.

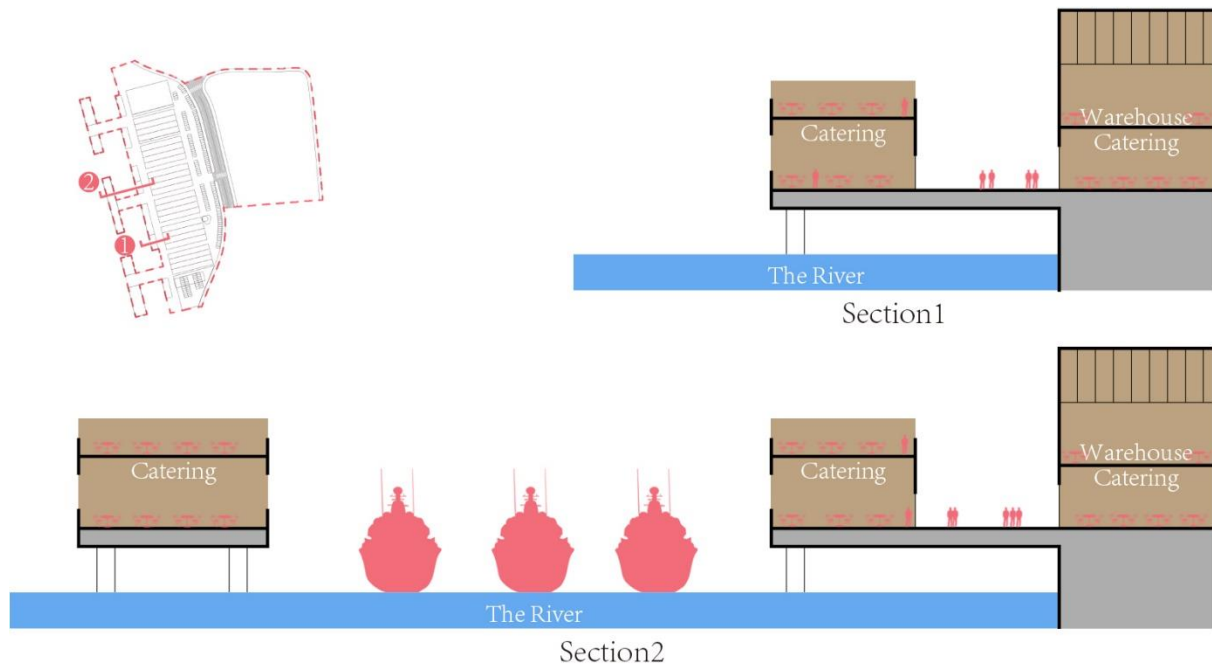


Fig 5-32 Waterfront Promenade Section Analysis (Source: by author)

Space for staying

After the first phase of renewal, the public seatings are mainly located in corridors between warehouses. According to the field investigation, there are 20 public seats, which can accommodate 50 people. There exist problems of insufficient number of public seats, poor sanitation and remote location. Many people stand at the Wharf Square and the Entrance Square at the north and south ends to enjoy the view of the river. People also sit on the abandoned iron piers along the river at the Wharf Squares for rest. During the daytime, some citizens enter the closed restaurants near the river and sit chatting.

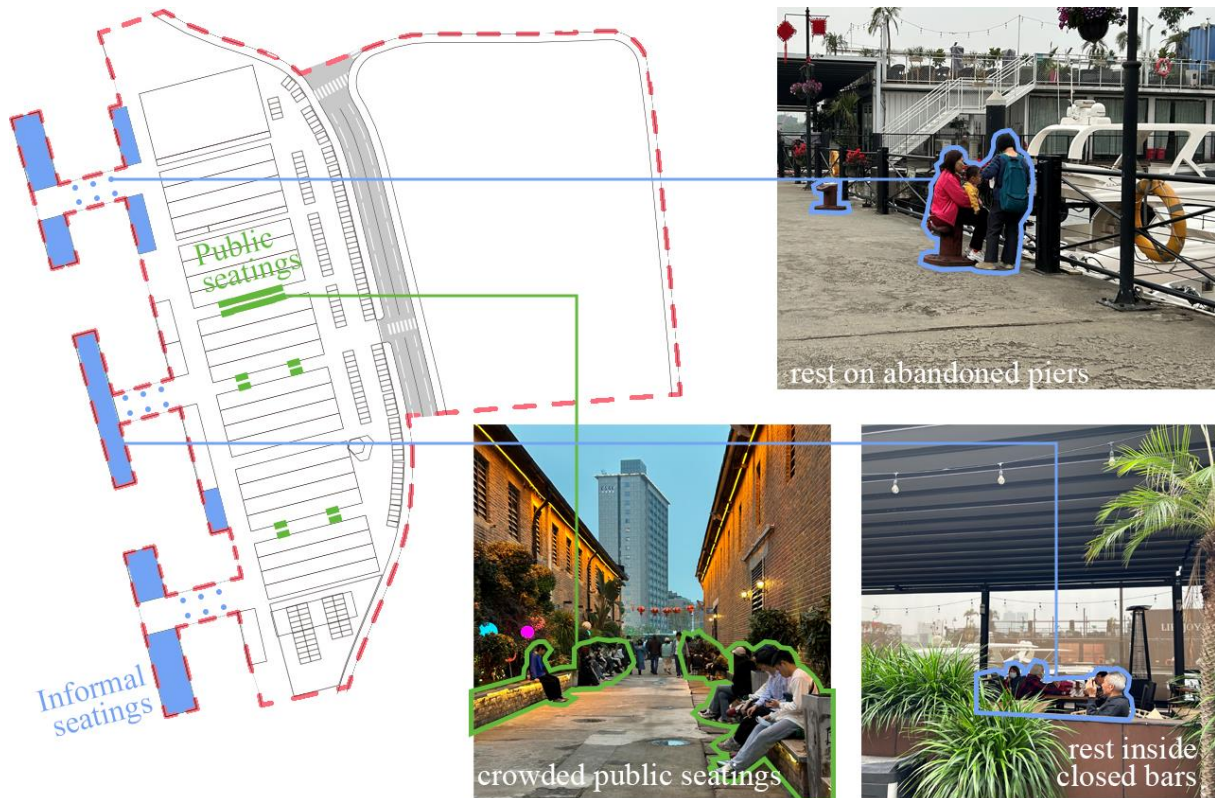


Fig 5-33 Citizens Rest on Abandoned Iron Piers (Source: photo by author)

Landscape

The landscape of Taikoo Warehouse & Wharf Area is composed of warehouse buildings and wharf components with industrial aesthetics, green landscape and the river view. On the whole, the landscape is richer and more beautiful at night than during the day.

During the daytime, most restaurants and bars are not open, so warehouses and docks are closed, and the overall landscape seems lonely. Pedestrians can only enjoy decorations on the exterior wall of the warehouses. The river view is seriously blocked by restaurants, dining cars and yachts, making it more difficult for people to enter the restaurant area of the wharf to enjoy the open view of the Pearl River. The green landscape beside the warehouse is perfectly matched with the red brick wall, but the area is small, and a complete green landscape system has not been formed.

The bank line of Taikoo W&W Area faces west, which is one of the best sunset viewing points

in Guangzhou. In the evening, if the weather is good, people can enjoy the beautiful sunset glow and sunset by consuming in the riverside restaurants or stand in the Entrance Square on the north and south side of the area.

In the evening, with the opening of the restaurant and the lighting, the landscape level of Taikoo W&W Area become richer while the industrial atmosphere is more attenuated. The colorful lights of the restaurants on both sides of the riverside road and the darkness of the surrounding environment further blur the industrial characteristics of the warehouses in the area and strengthen the atmosphere of a food street.



Fig 5-34 Waterfront Promenade Landscape (Source: photo by author)

5.2.9 Crowd Characteristics and Evaluation

(1) Questionnaire inquiry

Characteristics of the crowd and their behavior

From the perspective of crowd characteristics, the number of male and female tourists are similar, while the number of female tourists is slightly more. They are mainly students and office workers aged between 18 and 35. Generally, most of people come with 3-6 friends and seldom come alone. 59% of visitors came by public transport, while 16.4% by taxi and 14.9 % by car. The male to female ratio of residents is similar to that of tourists, but most of them are retired people over 55 years old. Residents who went to Taikoo W&W Area alone accounted for 38.5%, followed by small groups of 2-5 people. Almost all residents arrive the Taikoo area by foot.

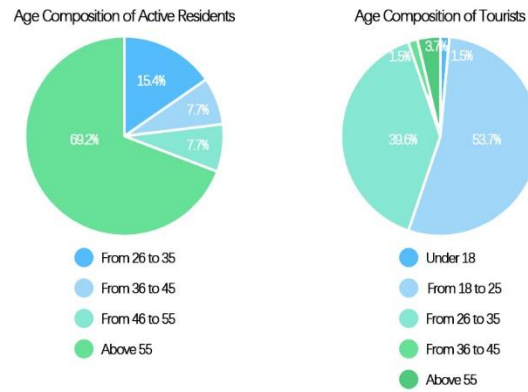


Fig 5-35 Age Composition of Active Residents and Tourists (Source: by author)

Based on the survey results above, it can be seen from the flow of people in different time periods that the flow of people on weekdays is far less than that on weekends and holidays, and the flow of people in daytime is also far less than that from evening to night. On the whole, the largest number of people went to Taikoo W&W Area in the evening or at night on weekends or holidays, while the least number went to Taikoo Cang area in the daytime on weekdays.

From the perspective of the crowd composition in different time periods, people active in the Taikoo W&W Area on weekdays are mainly the nearby residents who walk to the river for doing sports, most of whom are the elderly coming alone, and a few take part in activities with 2-5 friends. There are also a small number of young people chatting with friends and drinking coffee here, and small groups of 5-10 retirees who come to take photos and view the scene as well. On weekends or holidays during the day, the number of elderly people who come for doing sports in the morning reduced obviously. The crowd is mainly composed by young tourists and middle-aged tourists with children coming from further urban areas to take photos and enjoy the river view. In the evening and at night, the crowds in Taikoo W&W Area are mainly young visitors who come for enjoying the sunset and the river view, taking photos, having dinner, attending live concerts, drinking beer and listening to music. From time to time, some residents walk by with their children.

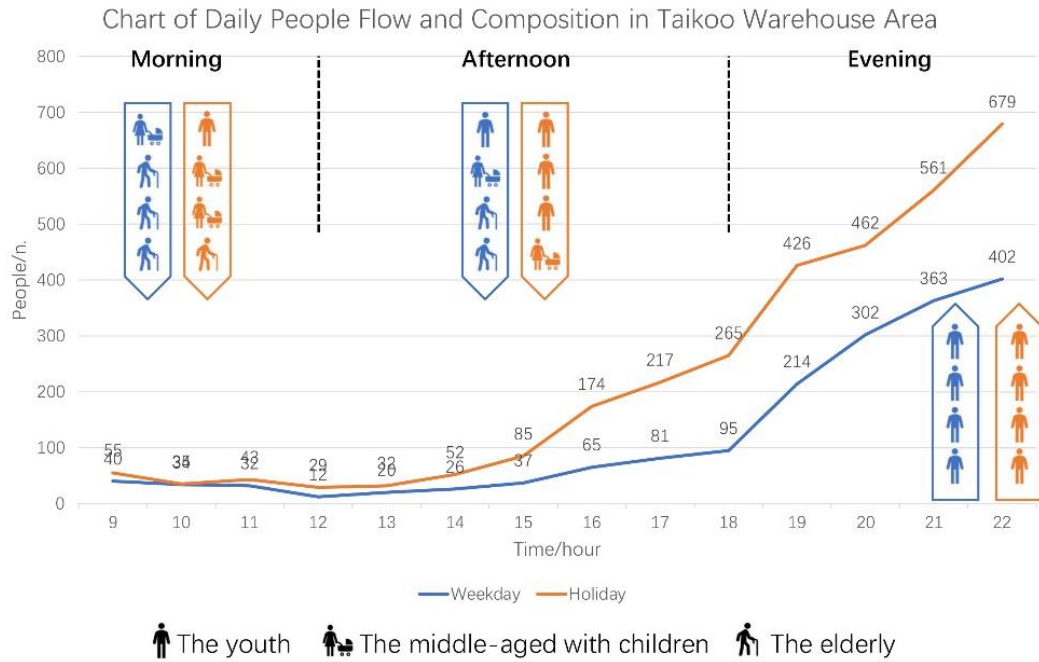


Fig 5-36 Chart of Daily People Flow and Crowd Composition in Taikoo Warehouse & Wharf Area (Source: by author)

In terms of the frequency of use of Taikoo W&W Area by different groups, the elderly who live nearby visit Taikoo area most frequently. Almost in every weekday morning, they go to Guangzhou Volunteer Park along the river and Taikoo W&W Area for walking and doing exercise. Secondly, young and middle-aged people who live nearby go for a walk in Taikoo W&W Area for 2 or 3 times per week. The number of tourists from other districts of Guangzhou is the largest, but their frequency of visiting Taikoo W&W Area is the least. According to the results of the questionnaire, most tourists have only visited Taikoo Cang for less than 5 times.

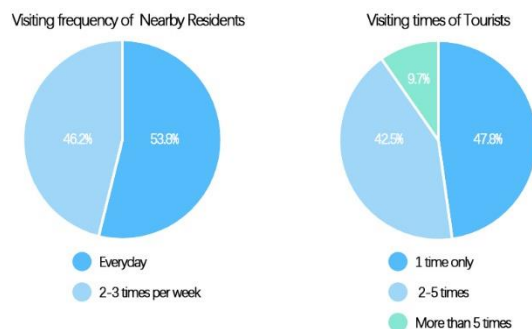


Fig 5-37 Visiting Frequency of Residents and Visiting Times of Tourists (Source: by author)

Crowd evaluation

According to the results of questionnaires distributed on site and online, nearby residents and tourists have negative impression on Taikoo Warehouse & Wharf Area.

a) Residents' evaluation

The people flow and traffic pressure brought by Taikoo W&W Area to the nearby road section impose the greatest impact on the daily life of residents. Secondly, residents have complained about tourists' indiscriminate parking of shared bikes on sidewalks. Elderly people choose to completely avoid going to Taikoo W&W Area during nights in workday, weekends and holidays because of the large flow of people and the annoying music.

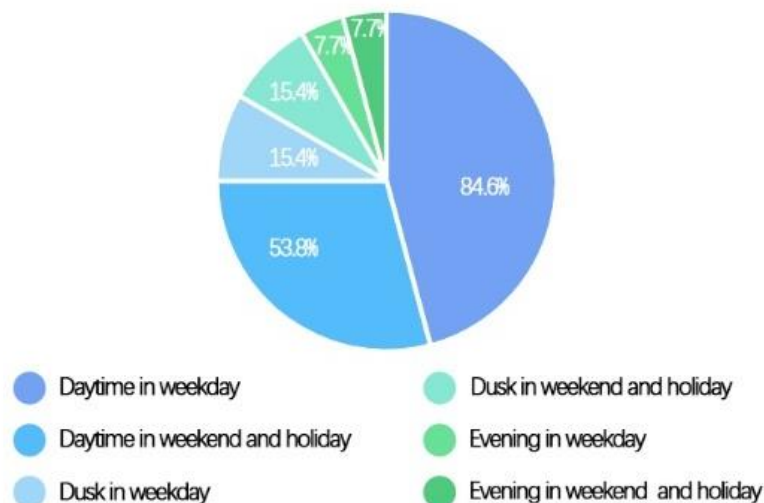


Fig 5-38 Active Time of Residents in Taikoo Warehouse & Wharf Area (Source: by author)

When it comes to the evaluation of the facilities inside the site, nearly 50% of the residents consider that the activities inside Taikoo W&W Ara are over high-consumption and young, which do not conform to their personal living habits. In terms of industrial culture experience, 85% of residents believe that Taikoo Warehouse is too commercialized in terms of functions and decorations of warehouses and wharves. In addition, the new functions implanted have a weak relationship with their own storage history, which is also a prominent problem.

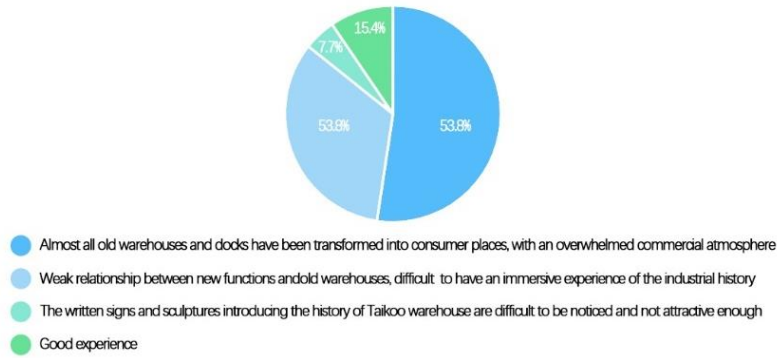


Fig 5-39 Residents' Comments on the Culture Experience in Taikoo Warehouse & Wharf Area
(Source: by author)

In terms of walking experience, residents expressed strong opinions on the boring activities on both sides of the riverwalk, the mixed movement of people and vehicles on the east square, and the chaos of the sidewalk occupied by bicycles. In addition, the lack of accessible slopes between the Taikoo W&W Area and the park on the south and north sides has caused problems for some elderly people.

In terms of interactive experience with water, residents think that the main problem is the lack of public areas for staying and viewing the Pearl River, and some residents think that the river view is over-commercialized.

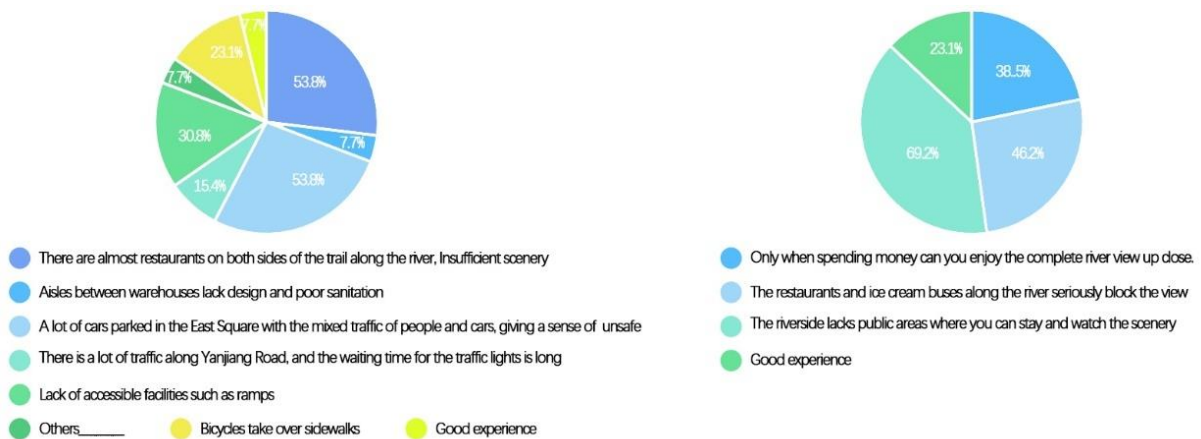


Fig 5-40 Residents' Comments on the Walking Experience and Water Interaction Experience in Taikoo Warehouse & Wharf Area (Source: by author)

In terms of landscape experience, residents consider that the most prominent problem is the blocked view of the river and the old warehouses. In addition, 30% residents think that the greening of Taikoo Cang area is insufficient and the overall area is lack of vitality.

When it comes to public space and facility for staying, nearly 85% residents think that the number of public seats in the area is insufficient. The existing public seats have poor sanitation, lack of maintenance and remote location, which also lead to a decrease in the use rate of residents.

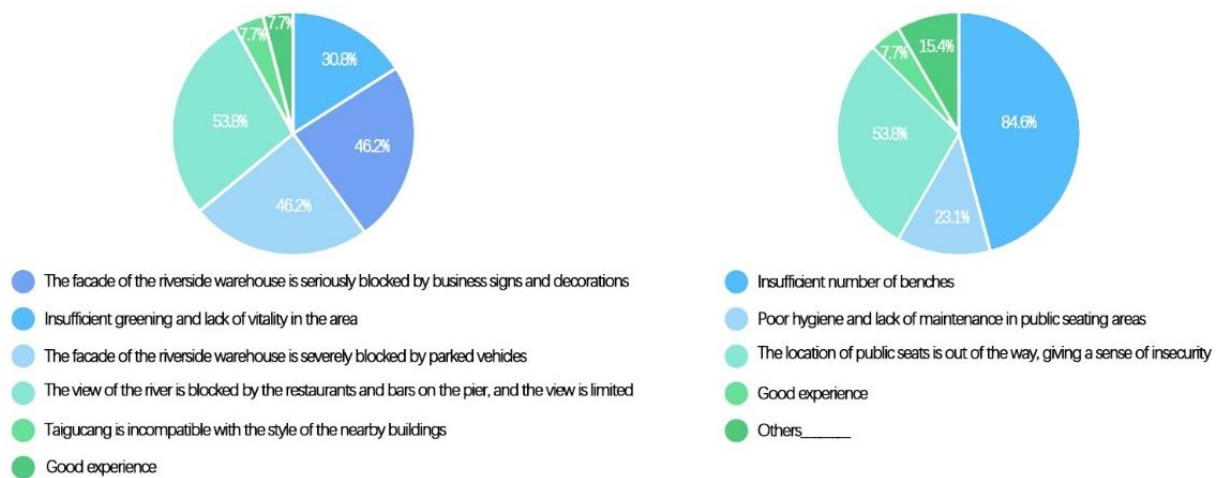


Fig 5-41 Residents' Comments on the Landscape and Public Seats of Taikoo Warehouse & Wharf Area (Source: by author)

b) Tourists' evaluation

In terms of travel arrangements, most tourists take Taikoo Warehouse & Wharf Area as their only destination and have little knowledge of the nearby cultural and landscape facilities.

In terms of industrial culture experience, most tourists have similar perceptions to residents, believing that old warehouses and wharves have overwhelming commercial atmosphere and the consumption threshold of experience is too high. Moreover, tourists generally know little about the history and past of Taikoo Cang, and ineffective history popularization in the site is also one of the main troubles of tourists.

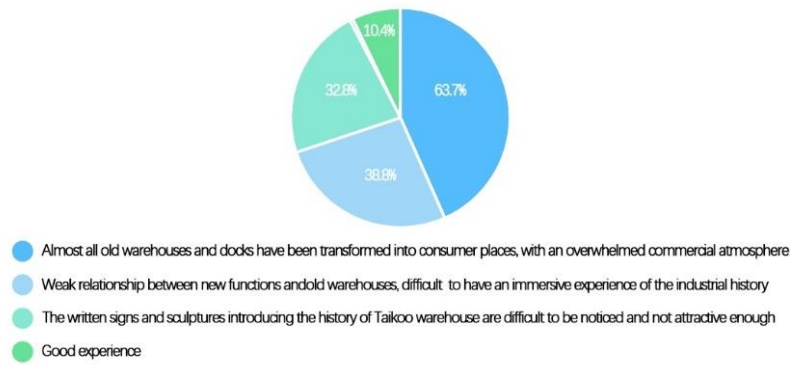


Fig 5-42 Tourists' Comments on the Wharf Culture Experience of Taikoo Warehouse & Wharf Area (Source: by author)

In terms of walking experience, many tourists are dissatisfied with the long waiting time for traffic lights at the Huangdao Road junction, the chaos of people and vehicles in the east square, and the lack of design and maintenance of corridors between warehouses.

In terms of interactive experience with the water, the data show that tourists have a demand for public, stoppable and different height river landscape platforms.



Fig 5-43 Tourists' Comments on the Walking Experience and Water Interaction Experience in Taikoo Warehouse & Wharf Area (Source: by author)

In terms of landscape experience, tourists also think that the blocked sight of the river view and the old warehouse, as well as the lack of greening are main problems. Some visitors find Taikoo Warehouses' historic architecture at odds with the surrounding modern residential towers.

Regarding to public staying space and facility experience, the insufficient number of public seats, lack of maintenance and remote location are the main problems for tourists. Demand for public seating was greater among daytime visitors than at night.

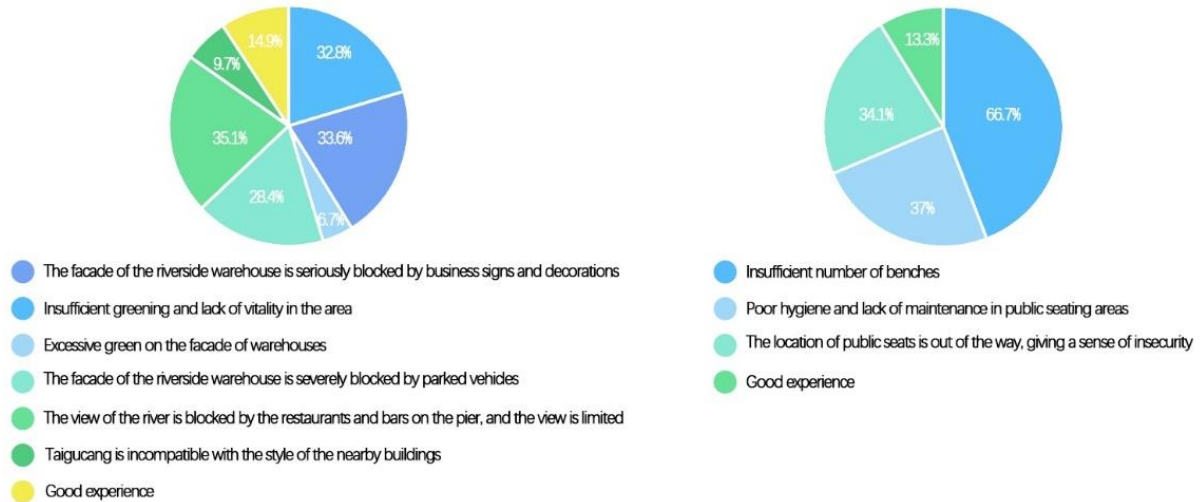


Fig 5-44 Tourists' Comments on the Landscape and Public Seats of Taikoo Warehouse & Wharf Area (Source: by author)

Tab 5-3 Evaluation of Public Space and Facility for Staying of Visitors Arriving at Different Time Periods (Source: by author)

	Insufficient public seats	Poor hygiene and lack of maintenance in seating area	The location of seats is out of the way	Good experience
Daytime in weekdays	8	5	4	6
Daytime in holidays	39	29	20	6
Evening in weekdays	13	8	7	5
Evening in holidays	33	16	14	6
Nighttime in weekdays	1	0	0	3
Nighttime in holidays	18	11	15	6

(2) On-site interviewing

The author interviewed 25 citizens at the site, including 5 young residents, 5 elderly residents, 5 young tourists, 5 elderly tourists, 5 catering staff and 3 management personnel. In general, the impression of each group of people on Taikoo Cang is similar to the results of the questionnaire. The author summarized and sorted out the main comments of various groups of people in the interview as a supplement. The result is concluded in the following table.

Tab 5-4 Major Comments from Different Groups of People Active in Taikoo Warehouse & Wharf Area (Source: by author)

People Type	Major Comments
Young residents	(a) One of the most preferable places to dine with friends; (b) when walking in the evening, I always bypass the riverside walk in the Taikoo Warehouse & Wharf Area due to the large flow of tourists; (c) inconvenience of the public transportation nearby; (4) frequent traffic jams occur in the neighborhood at night
Aged residents	(a) The noisiness at night caused by a number of young tourists; (2) go to Taikoo W&W Area only during the daytime of weekdays rather than during busy times such as evenings and weekends; (3) the renovation of Taikoo W&W Area is specially designed for the young and high consumption group, which does not suit me; (4) traffic jams often occur in the neighborhood at night; (5) the nearby public transportation is convenient; (6) Nowadays, the Taikoo W&W Area is a pure business district, and have no relationship with the former wharf
Young tourists	(a) Similar to other renewed old industrial areas in Guangzhou, without specific characteristics; (b) It's like a food court, but it's not as enjoyable as Patti Area; (c) No immersion in industrial history at all; (d) The river view is severely blocked; (e) Lots of photogenic scenes; (f) Live concerts provide great experience; (g) The walk distance from Shayuan metro station to Taikoo W&W Area is too long, and the walk distance from the bus station to Tai Koo Cang is too long as well; (h) Serious shortage of parking Spaces at night; (i) The public seats are invisible
Aged tourists	(a) Come with kids and it is convenient to visit the surrounding park; (b) Lack of seats; (c) The consumption level is too high to have meals her; (d) Lots of photogenic scenes; (e) The bus transit is convenient; (f) The river view is severely blocked
Catering staff	(a) Few customers during the days of weekdays, while all most every restaurant is full at nights and weekends; (b) Most of the customers are young people; (c) There are numbers of tourists on weekend afternoons, making it inconvenient for trucks to enter the Riverside walk
Workers in the creative park	(a) During the day, often chat with colleagues or customers in the café ; (b) The office is a little far from the subway station, which is not convenient enough in terms of daily commuting; (c) The park is too noisy to work at night; (d) After the epidemic, the vacancy rate of shops on the first floor of the Creative Park is much higher, while the vacancy rate of office area on the second floor was lower; (e) Nearby restaurants are expensive and open in evenings only. Lunch is usually delivered.
Management	(a) Different types of restaurants can meet different needs of tourists, and the consumption level of the

personnel of the park	restaurants that have settled in is much lower than the beginning period; (b) Serious shortage of parking space at night; (c) Inadequate queue space for tourists waiting to get into the live concert
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5.3 Summary

According to the survey, there is an aging population in Longfeng Street, but there is a lack of service facilities for the elderly and children, as well as insufficient public sports facilities. In terms of accessibility, the site's public transport connections are inconvenient and the road system is incomplete, resulting in frequent traffic jams around Taikoo W&W Area during peak hours. In terms of industrial culture, Taikoo Warehouse and Wharf lacks connection with the surrounding industrial heritage and other public cultural facilities, and its industrial characteristics are weakened by commercial activities. The cultural display and history popularization are insufficient, resulting in the covered-up industrial identity. As an important waterfront industrial heritage node, the historical continuity and identification of Taikoo Warehouse & Wharf Area need to be improved. In addition, the whole area is dominated by high-consumption commercial activities, which has a negative impact on different types of people in terms of walking, interaction with water, staying and landscape experience. The openness and inclusiveness of industrial heritage and the waterfront space are seriously insufficient. However, the second phase of the renewal project only focuses on the planning of the east plot, ignoring the connection with the warehouses and wharves, and the surrounding urban environment. The construction of the project is not only difficult to improve the current situation of excessive commercialization, weakening industrial characteristics and traffic congestion, but may worsen the problem to some extent.

Dimension of Publicness		Existing problem in Taikoo W&W Area and the surrounding area
Cultural Continuity	Urban landscape	• Covered up industrial identity
	Urban block	• Weak spatial connection between two phases of renewal and the surroundings
	Architecture	• Weak connection between new functions and the history
	Open space	• Occupied wharves and waterfront promenade
Accessibility	External accessibility	• Low public accessibility • Traffic congestion due to the incomplete road system
	Internal accessibility	• Unsafe walking environment for the pedestrian • Inaccessible warehouses and wharves
Openness	Space interface	• Opaque brick wall • Dull interaction with water
	Opening time	• Closed in daytime
Inclusiveness	Mixed function	• High-consumption catering dominated • Insufficient sport facilities and services for the elderly and children
	Mixed social groups	• Lack of consideration on the residents
Recognizability	Urban waterfront landscape	• A sense of food street, given by the waterfront additional dinning boxes
	Internal function	• Unrecognizable public seats

Fig 5-45 Existing Problems from the Perspective of Publicness (Source: by author)

<p>Strengths</p> <ol style="list-style-type: none"> 1. Well-preserved large-span industrial heritage 2. Waterfront location 	<p>Weaknesses</p> <ol style="list-style-type: none"> 1. Low public accessibility 2. Low accessibility to warehouses and water 3. Weak functional connection with the surroundings 4. Single and over-commercialized functionality 5. Lost vitality in daytime
<p>Opportunities</p> <ol style="list-style-type: none"> 1. Supportive policies on industrial heritage renovation and the development of public waterfront 2. New road construction 3. Popularity of the place among citizens 4. Surrounded by residence blocks 5. Lack of services for the elderly and children 	<p>Threats</p> <ol style="list-style-type: none"> 1. More commerce and office planned in the 2nd phase of the renewal 2. Aging population

Fig 5-46 SWOT Analysis (Source: by author)

In a word, the most prominent problem in Taikoo W&W Area lies in the excessive pursuit of economic benefits in the renewal activities, blindly catering to the preference of young consumers and high-consumption groups, while ignoring the needs of other people. As a result, the public accessibility of this area is poor and the inclusiveness of various citizens is insufficient. Eventually, it leads to the privatization of the waterfront landscape and industrial heritage, and the separative relationship with the city. Therefore, in the following design scheme, the plots of 2 phases of Taikoo W&W area renewal projects should be designed as a whole, and make a strong response to the problems mentioned above.

Chapter 6 Publicness as Renewal Strategy for Guangzhou Taikoo Warehouse & Wharf Area

6.1 Planning Concept

Taikoo Warehouse & Wharf Area is located at No. 124, Gexin Road, Longfeng Street, Haizhu District, Guangzhou City. It is located in the center of Baietan Waterfront Industrial Heritage Belt with abundant industrial heritage resources around it. The Taikoo W&W Area is surrounded by the Pearl River in the west and the closed residential communities in the east, which separates the relationship with other parts of the city. The rich historical and cultural deposits and waterfront location of Taikoo W&W Area bring it the potential to become an important urban public space node. The first phase of the renewal project in 2007 aims to transform it into a waterfront leisure space and commercial cultural scenic spot integrating exhibition and trade, sightseeing and tourism, recreation and cultural creativity. However, with the encroachment of commercialization, the area as a whole now has the problem of being friendly only to a certain group of high-spending tourists and the industrial historical characteristics are obscured. The plot of the second phase of the renewal, planned for construction in recent years, is located in the east of the old warehouse and wharf area, and is planned to be a world-class art and leisure landmark with the theme of port wharf culture. However, its business mode is still mainly commercial and office, and it lacks spatial connection with the first phase renewal project. The ongoing renewal is not only difficult to improve the existing problems of Taikoo W&W area, it may even aggravate the situation where the excessive pursuit of commercial interests damages the urban fabric and industrial historical context.

Therefore, taking the plots of the two phases of the renewal of Taikoo Warehouse & Wharf Area as a whole, this design will take the industrial heritage and cultural block as the planning concept for the Taikoo W&W Area, and seize the opportunity to integrate Taikoo W&W Area

back into the modern life of the surrounding urban environment and re-create its unique historical and cultural personality, enhancing the overall publicness in time and space dimension and optimizing the connection between industrial heritage, waterfront space and the city.

6.2 Design Principle

In view of the dual spatial characteristics of waterfront and historical relic of Guangzhou Taikoo Warehouse & Wharf Area as a waterfront industrial heritage, a more specific interpretation will be made on the five basic dimensions of publicness, which are cultural continuity, accessibility, openness, inclusiveness and recognizability, in the specific design principles, in order to provide a more practical guiding significance for the subsequent design.

(1) Cultural continuity

The principle of cultural continuity is to respect and continue the intangible value of space, to increase the thickness of the space with its unique historical, cultural and aesthetic values, providing a spiritual basis for more rich and meaningful social activities, so as to improve the quality of public activities in the space, enhance the attraction of space to the public, and produce public influence on the greater scope of the city.

In the renewal of waterfront industry heritage, the principle of cultural continuity is the respect and continuation of its regional historical context. Waterfront industrial heritage contains rich historical and cultural relics and cultural landscape, with the characteristics of diversification. In order to continue the historical context of the city and improve the quality of public life, the renewal and renovation should fully study and protect the historical and cultural characteristics of the industrial heritage, and create an urban environment that is compatible with the modern urban needs and historical context in the renewal process, further activating the public attributes of the waterfront space by using the historical, cultural and aesthetic values of the industrial

heritage. Consequently, it is able to provide high quality urban public life for the citizens of the larger metropolitan area.

(2) Accessibility

The accessible character of physical space is the basis for public activities to take place, which can be discussed respectively in the dimension of external and internal accessibility. The spatial accessibility of the site can be measured by the number of alternative routes to reach and go through the space. The external accessibility of the space is mainly affected by the location of the space itself and the surrounding traffic conditions. The location of space in the city is the basis of accessibility. The closer the space is to the urban center, the easier it is to be traversed by the daily life of more citizens. The transportation facilities around the space affect the accessibility of the site on the urban scale, among which the integrity of the public transportation network is the main influencing factor. On the dimension of internal accessibility, the more internal spaces people can enter and the more abundant paths they can walk, the higher the internal accessibility.

Therefore, accessibility is the basic guarantee to enhance the public vitality of the site in the renewal of waterfront industrial heritage. In terms of the external accessibility, the location condition of urban waterfront leads to the inherent weak external accessibility, so attention should be paid to improving the accessibility of public transport in the design strategy. In terms of internal accessibility, the more industrial heritage and other urban spaces people can enter, the freer the path they can walk through, the higher the internal accessibility will be.

(3) Openness

The principle of openness focuses on creating a transitional composite space between the completely public space and the completely private domain, in order to promote the harmonious integration of the two. The openness of space can be discussed from the two dimensions of space interface and time. The space that the public can access and use at any time without any

restriction has the strongest openness. The open spatial interface enhances the connection and natural transition between inside and outside the site and between indoor and outdoor spaces, providing more possibilities for the way people use the space. Spaces that are open for long periods of time have fewer restrictions on how long people can use them. Therefore, by opening up the space interface and using time, people can facilitate the process of participating in and initiating activities, thus increasing the autonomy and richness of participation in social activities.

In general, waterfront industrial heritage has the characteristics of diverse space types. Opening the interface between water body, waterfront open space, industrial heritage and urban space will be helpful to promote the interaction between spaces, and promote the communication between people and activities in different spaces while improving the quality of space. In terms of time dimension, extending the opening time of different urban spaces, especially waterfront space and industrial heritage to the public can effectively improve the openness of waterfront industrial heritage.

(4) Inclusiveness

Spatial inclusiveness represents the characteristics of the space accepting different types of people and activities. The presupposition of managers and designers on user groups and activity types greatly affects the strength of space inclusiveness. Spatial scale, activity control, use cost, special needs of socially vulnerable groups such as the elderly, children and the disabled are the main factors affecting space inclusiveness. A space with high inclusiveness should be friendly to different groups and activities without other rigid controls outside the legal provisions, so that different groups and public activities can blend together, further promote social interaction and enrich the experience of public life. Therefore, spatial inclusiveness is a key factor in the diversity and interactivity of public activities.

Historically, waterfront industrial zone is a functional space serving industrial production. In the renewal of waterfront industrial heritage, human dimension should be introduced to reflect

the inclusiveness for different users. Moreover, from the perspective of location, natural and historical and cultural values, waterfront industrial heritage is a scarce urban public resource in modern cities, which should be shared by all citizens rather than monopolized by private or minority interest groups. Therefore, in the process of development, attention should be paid to the balance between public interests and economic interests. In order to improve the fairness of waterfront industrial heritage space and promote the harmonious development of society, reasonable allocation of public facilities should be strengthened, the needs of different groups should be taken into account as much as possible, and the possibility of most citizens using such valuable composite urban space should be guaranteed.

(5) Recognizability

Recognizability is the basic requirement of human to living environment. The principle of space recognizability is based on people's psychological needs, internal cognition and the agreed relationship between object images. By emphasizing the characteristics and forms of space, unique personality and certainty is given to it, so as to attract people's attention and arouse their behavior of use. People are more willing to act in the space with high recognizability, which enables the realization of the public value of space.

On the one hand, the renewal of waterfront industrial heritage based on the principle of recognizability should pay attention to the protection and display of the historical landscape of the industrial heritage, protect the historical characteristics of industrial heritage and promote the integration and communication between the historical and modern urban landscape, improving the sense of layering and integration of urban landscape. On the other hand, the layout of identifiable spatial factors can reflect the positioning of different spaces, guiding people to use the space and promoting more public activities to take place.

6.3 Overall Design Strategy

In order to improve the publicness of Guangzhou Taikoo Warehouse & Wharf Area, the overall renewal strategy can be divided into four parts: preserving and renovating the industrial heritage, multilayered transportation system, mixed-function land use and spatial form of flexible interface.

(1) Preserving and renovating the industrial heritage

The protection and utilization of industrial heritage in the design scheme will be developed on four scales: landscape, city, architecture and urban furniture. Firstly, by restoring and representing recognizable landscape elements such as facade of warehouse, internal structure of warehouse, water tower, industrial components, wharf and water body, the historical environmental landscape of the area is protected and opened. Secondly, the plot of the second phase renewal on the east side continues the spatial texture of the industrial heritage area, forming a landscape corridor connecting the inner city, the industrial heritage and the waterfront. In addition, designing the form and landscape of the new architectural space with the form, material and scale of the historic buildings. And the landscape continuity of the old and new areas can be realized. Finally, function replacement of the old warehouses is carried out, more historical and creative functions are arranged in the warehouses, and historical and cultural exhibition hall is placed in the central area of the site, so as to materialize the intangible value of the industrial heritage in a vivid and interesting way and improve the cultural continuity of the heritage.

(2) Multi-layered transportation system

In the aspect of public transport system, in order to improve the public accessibility of the site, the connection between the site and bus stops will be optimized, and water traffic will be integrated. Secondly, a continuous and diverse pedestrian system is established to connect the

city, industrial heritage and the waterfront, improve the external and internal accessibility of industrial heritage and waterfront space, and provide rich historical culture and riverside experience at the same time.

(3) Mixed-function land use

In the aspect of function organization, the scheme will realize the functional mixing between Taikoo Warehouse & Wharf Area and the surrounding urban environment on the urban block scale, the organic compound between the architecture functions in the site and the mutual integration of outdoor activity space on the open space scale, in order to enhance the sharing and openness of the overall space of Taikoo Warehouse & Wharf Area.

(4) Spatial form of flexible interface

There are four spatial types of the site: water body, open space, industrial heritage and urban architecture. The spatial interface has the possibility of multi-layered landscape and functional integration, which can improve the transparency and functionality of interfacial space of different space types, so as to realize the combination and penetration between different spaces, and further improve the openness and internal accessibility of the site.



LEGEND

- | | | |
|--------------------------------------|--------------------------------|------------------------------|
| 1 Library | 7 Wine Exhibition Center & Bar | 13 Community Service Center |
| 2 Cultural Warehouse | 8 Yacht Club | 14 Community Children Palace |
| 3 SHOW-Case | 9 Entrance Square | 15 Office Tower |
| 4 Taikoo Warehouse Museum of History | 10 Wharf Square | 16 Commercial and Catering |
| 5 Creative Handcraft Warehouse | 11 Taikoo Wharf | 17 Riverway Sports Square |
| 6 Creative Food Warehouse | 12 Youth Residential | 18 Taikoo Warehouse Memorial |

Fig 6-1 Master Plan of Taikoo Warehouse & Wharf Area Renewal Project (Source: by author)



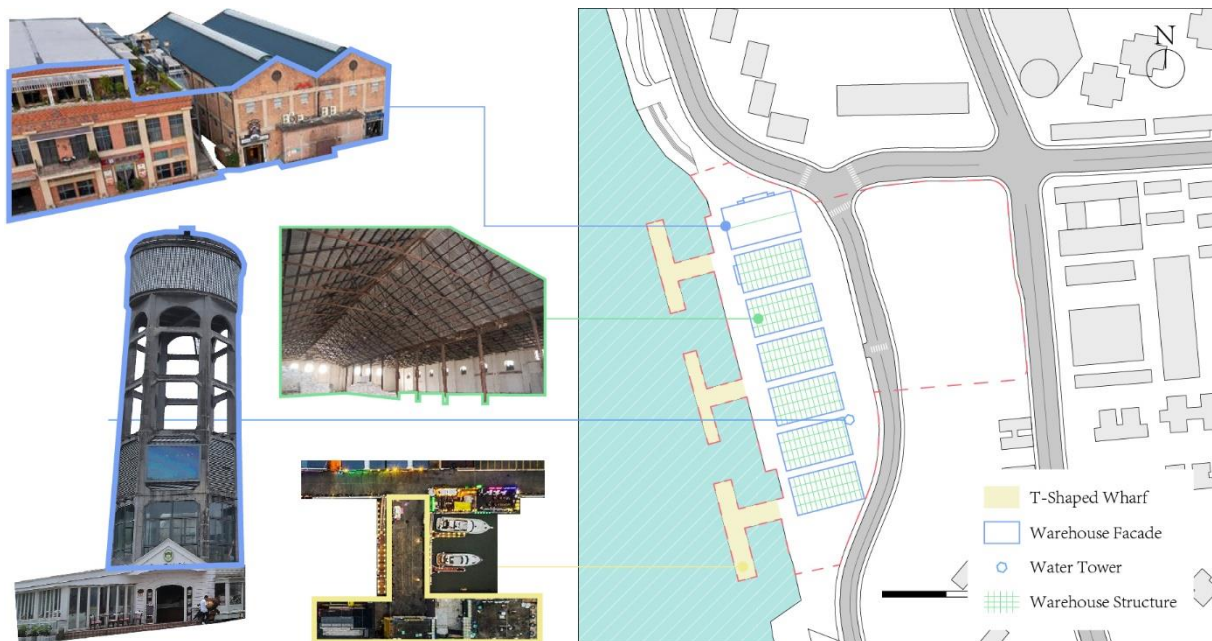
Fig 6-2 Overall Axonometric View of the Renewal of Taikoo W&W Area (Source: by author)

6.4 Design Scheme

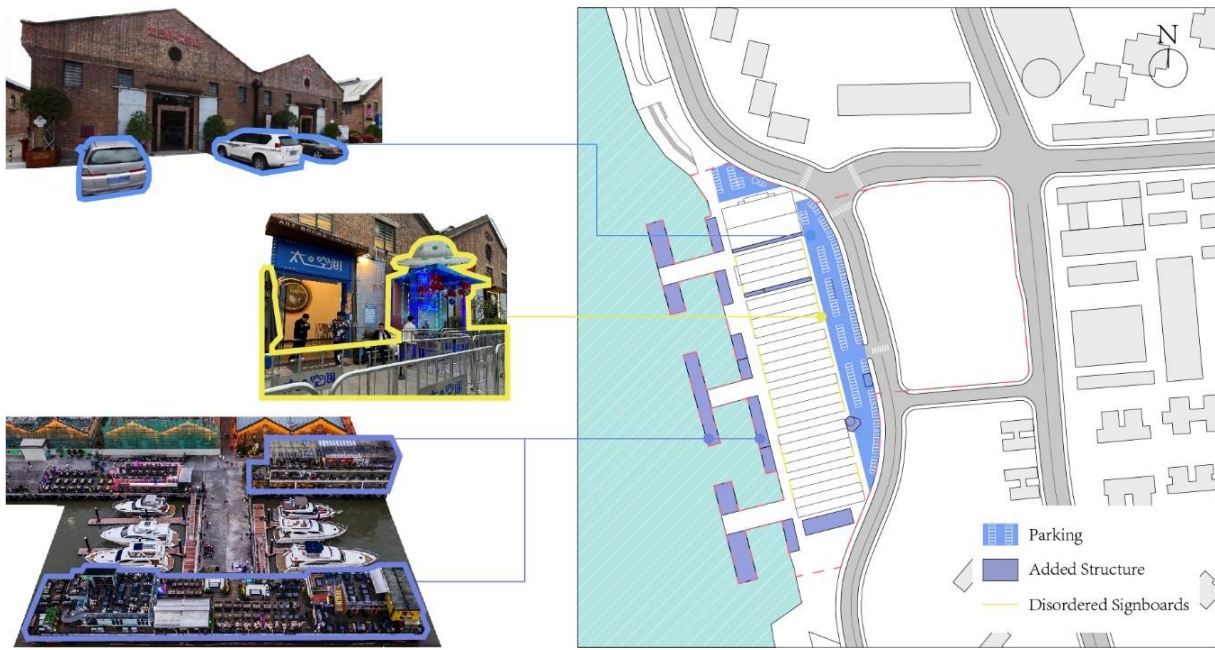
6.4.1 Preserving and Renovating the Industrial Heritage

(1) To restore and open the historic landscape of Taikoo W&W Area

The historical landscape of Taikoo W&W Area is mainly composed of the facades and internal structures of seven old red brick warehouses, a steel water tower with a height of 16m, three T-shaped concrete wharves and the water body. For commercial purposes, the corridors between the red brick warehouses are occupied by an addition that serves as the hotel's logistics function. The facades of the warehouse are obscured by exaggerated shop signs, decorations and parked vehicles, while the internal structure is obscured by commercial decorations and mezzanines. The restaurants and bars built on the riverside walk and three T-shaped wharves make it difficult for people to perceive the existence of wharves and water.



a) elements of the Industrial Landscape

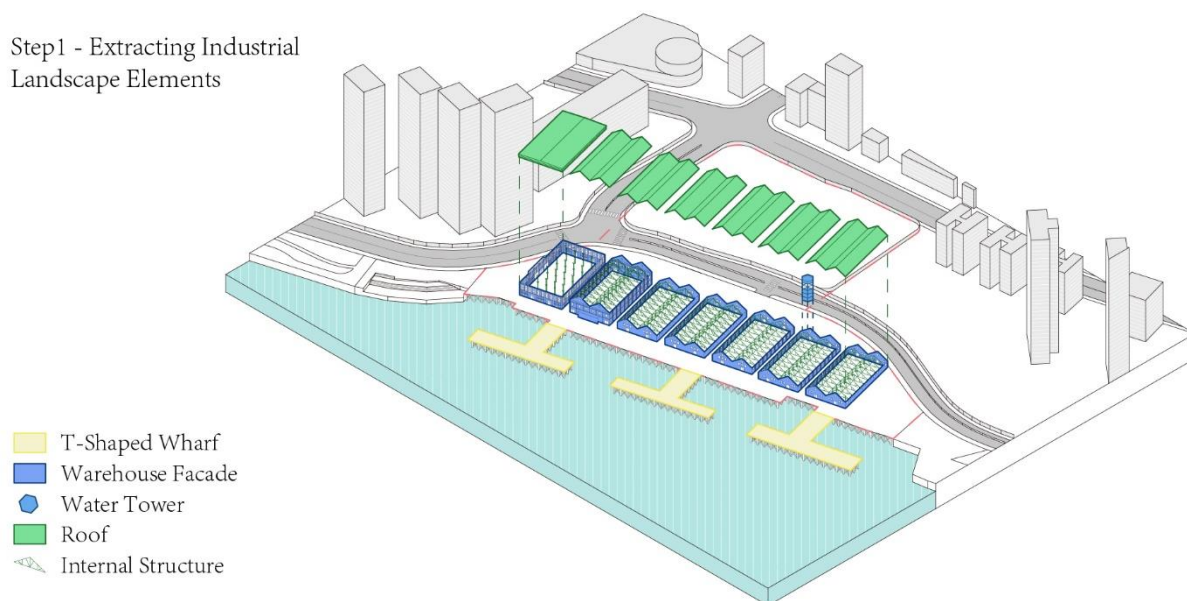


b) existing disordered elements

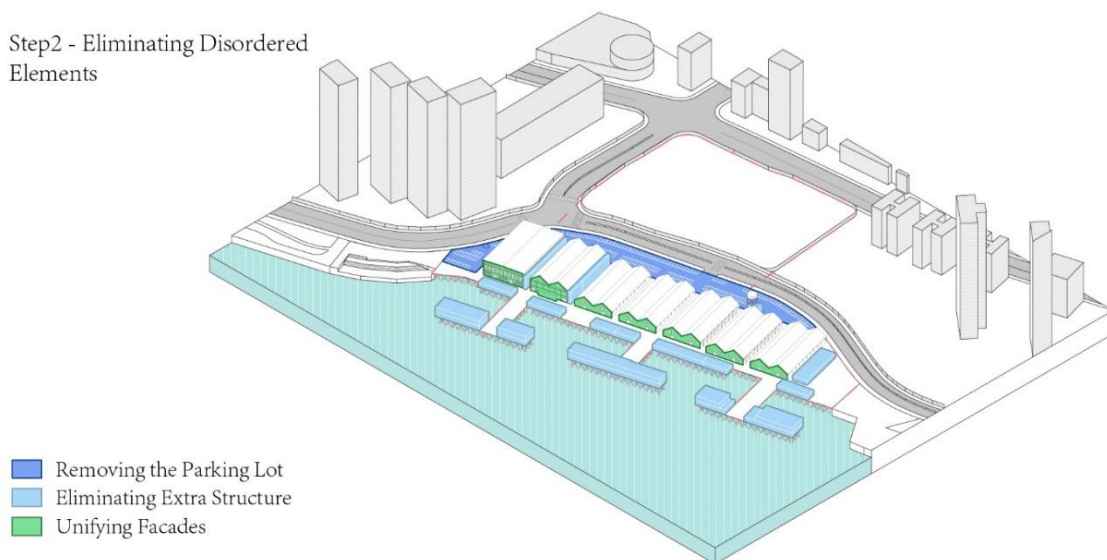
Fig 6-3 Resources and Threats of the Industrial Landscape (Source: by author)

Therefore, in order to better protect and open up the overall historic landscape, the shielding elements that affect the integrity of the landscape will be removed at first and the signage system within the site will be unified. Secondly, the light box is designed to strengthen the presence of the water tower, which will become the landmark identification element of the site. Thirdly, people's experience of historical landscape can be enriched by diversifying the pedestrian circulation both inside and outside industrial heritage at different heights. Fourthly, new functions will be placed inside the warehouses in the form of boxes to ensure the exposure of the internal structure and improve the openness of the internal historical landscape. Finally, it aims to increase the historical continuity, inclusiveness and openness of industrial heritage through the placement of more public, diverse and historically relevant functions in warehouses, wharves and other open spaces.

Step1 - Extracting Industrial Landscape Elements



Step2 - Eliminating Disordered Elements



Step3 - Highlighting the Highest Industrial Structure

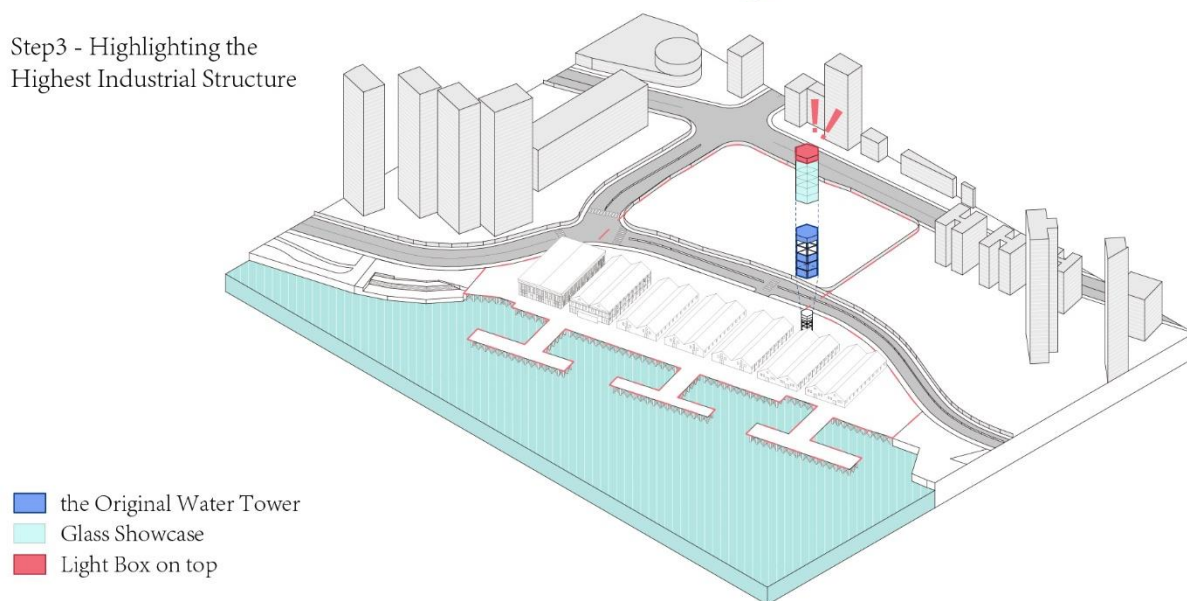
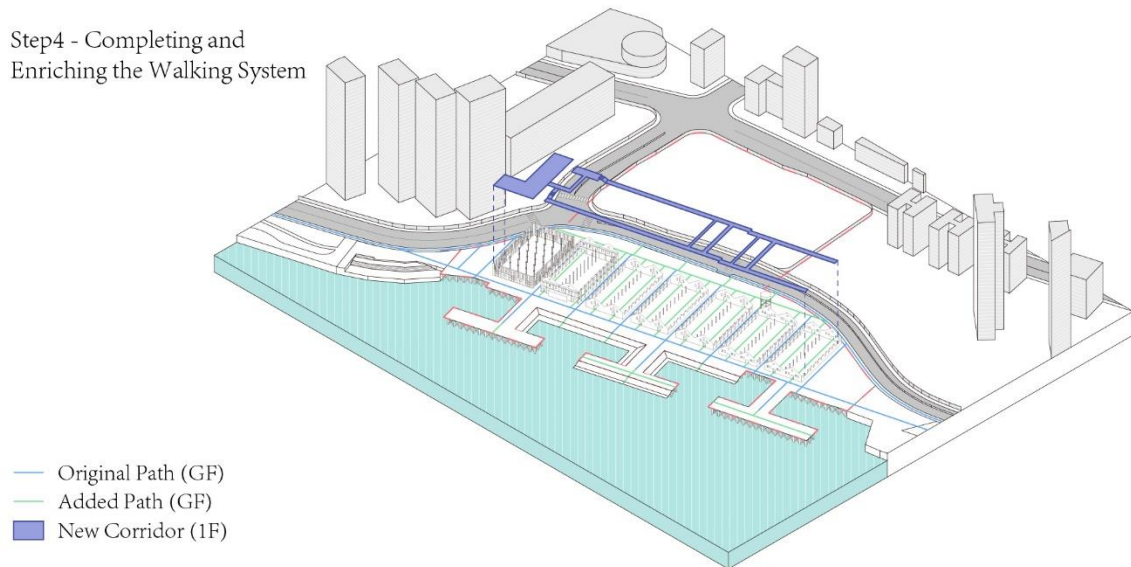
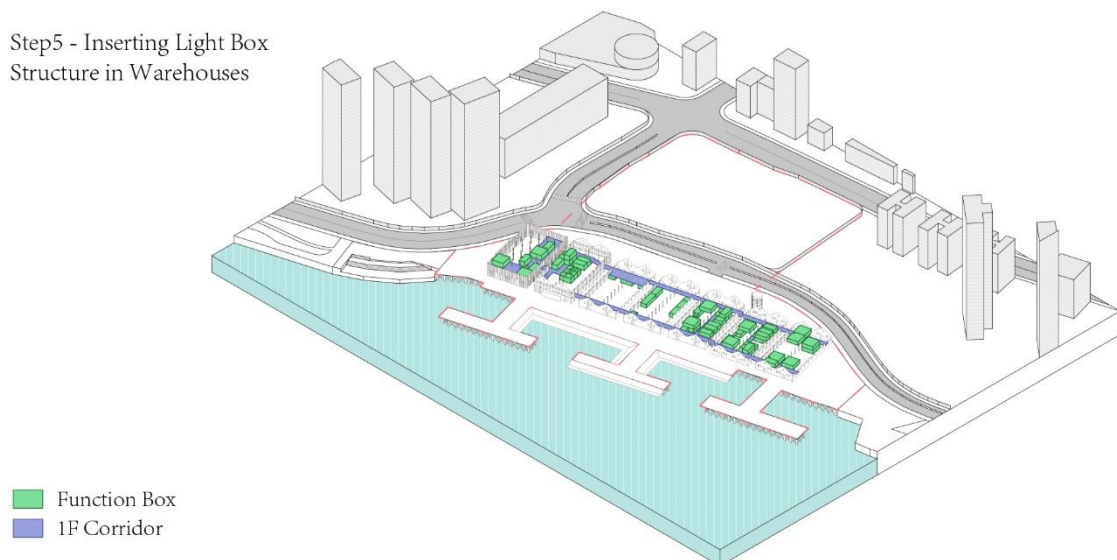


Fig 6-4 Historical Landscape Preservation Analysis Step 1-3 (Source: by author)

Step4 - Completing and
Enriching the Walking System



Step5 - Inserting Light Box
Structure in Warehouses



Step6 - Inserting Diverse
Functions indoor and outdoor

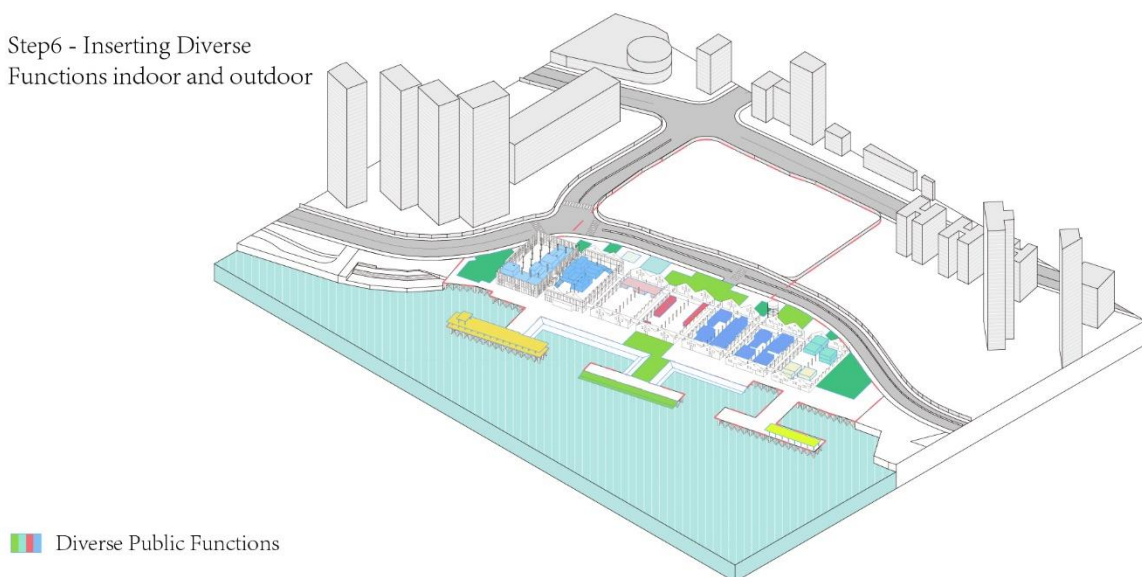


Fig 6-5 Historical Landscape Preservation Analysis Step 4-6 (Source: by author)

In the reconstruction of the internal space of the old warehouses, in order to ensure the visibility of the internal structure and the practicability of the space, there are mainly five types of box arrangement. The first is to place the boxes along the perimeter of the warehouse, which is suitable for functions that require a large-scale and flexible event space, such as the Taikoo Warehouse Museum of History. The second is to place the boxes under one side of the corridor, which can provide a more complete activity space and stands on the second floor, suitable for the function of stage. The third is to centrally place the boxes in the middle of the warehouse, connecting the first-floor corridors on both sides. This arrangement is suitable for functions that require high spatial connectivity, such as creative cultural, food and handcraft boxes that combine functions of office and markets. The last is to attach the boxes to two corridors individually, which is suitable for function has certain requirements on spatial privacy, such as the yacht club and red wine exhibition center.

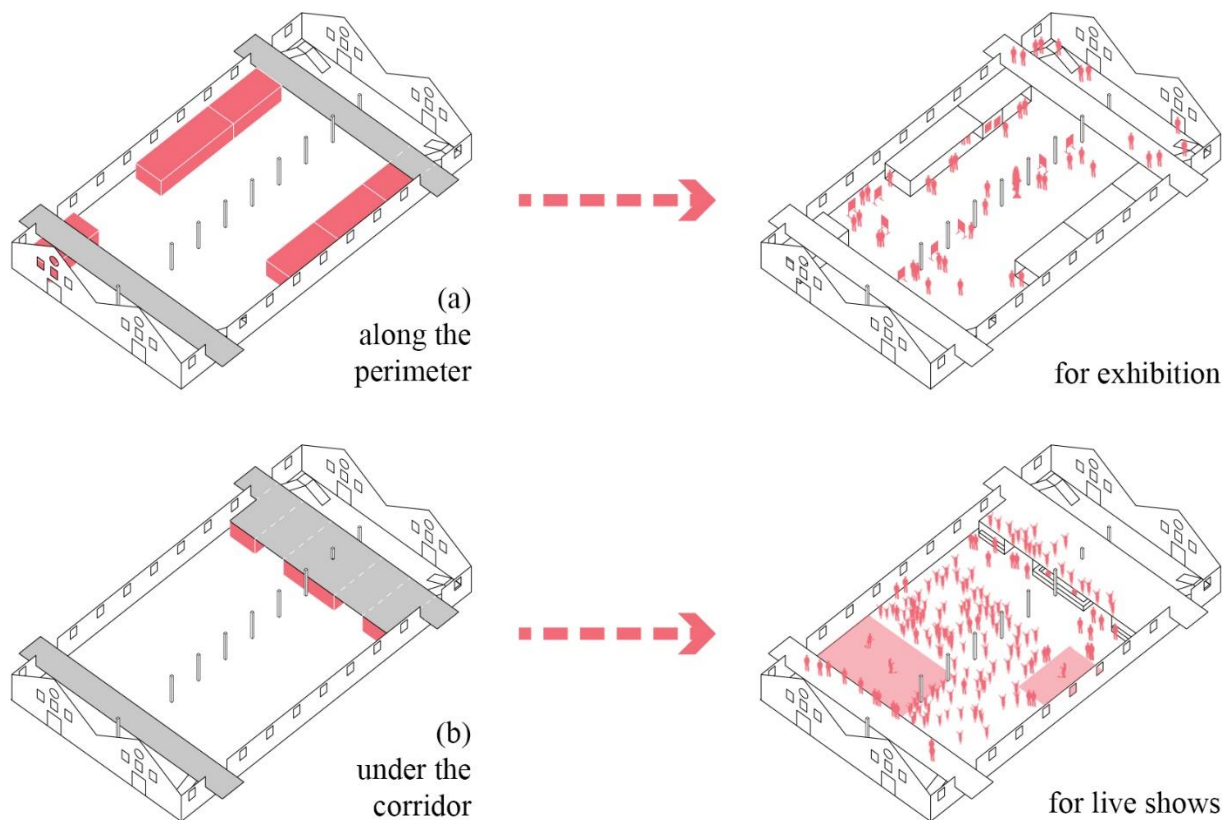


Fig 6-6 Typology a-b of Function Box Arrangement in Old Warehouses (Source: by author)

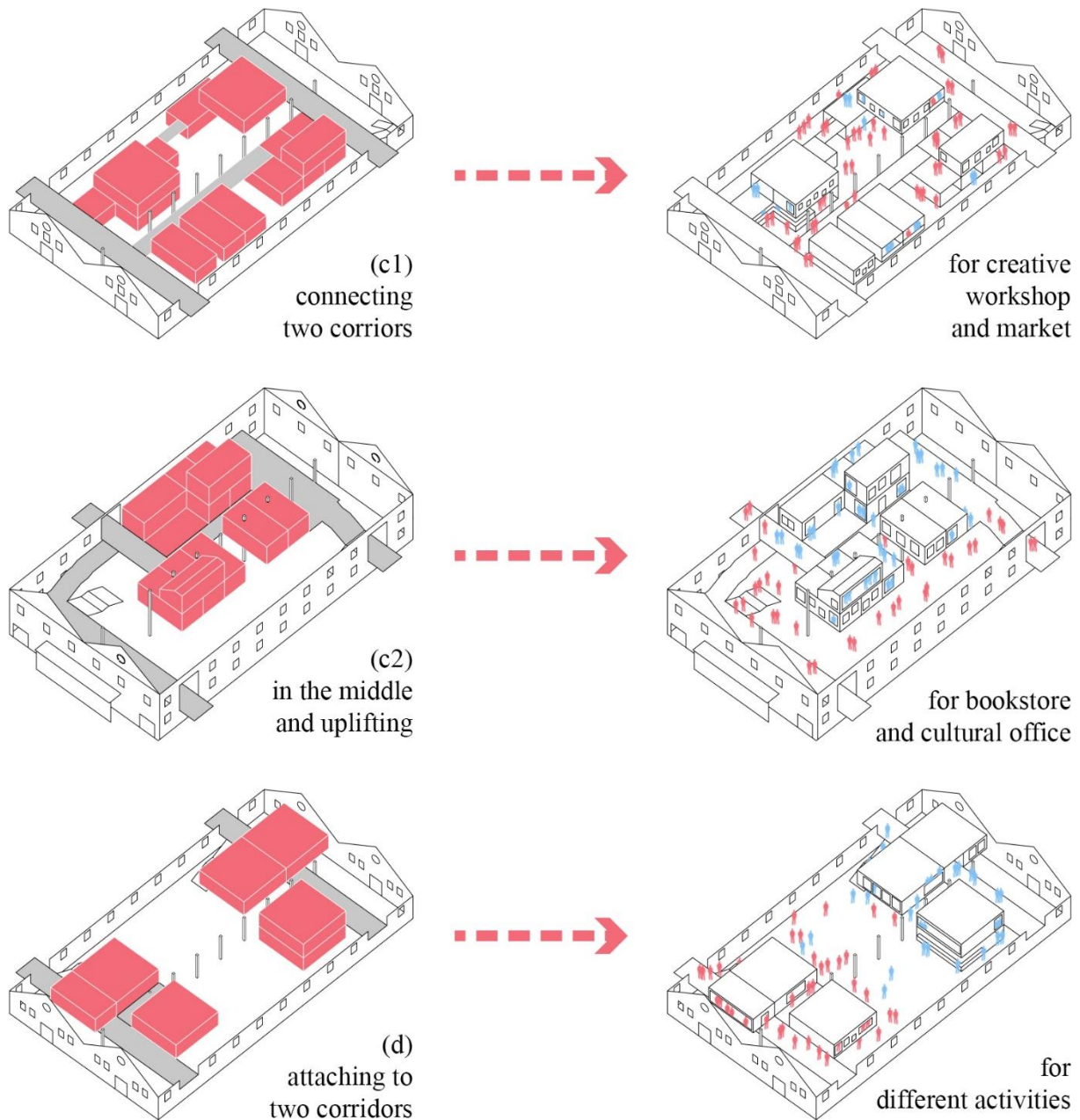
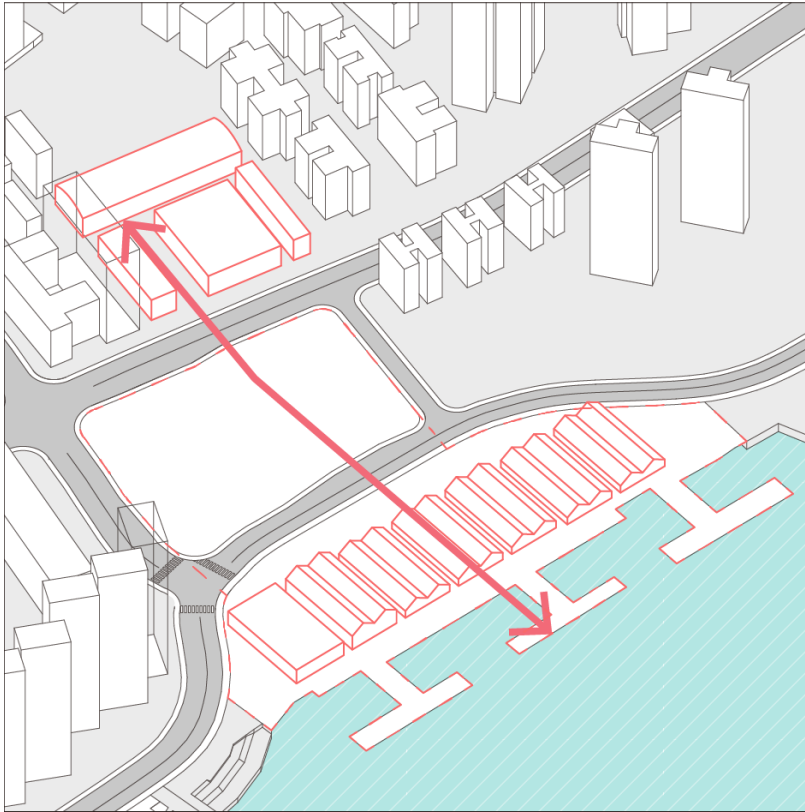


Fig 6-7 Typology c-d of Function Box Arrangement in Old Warehouses (Source: by author)

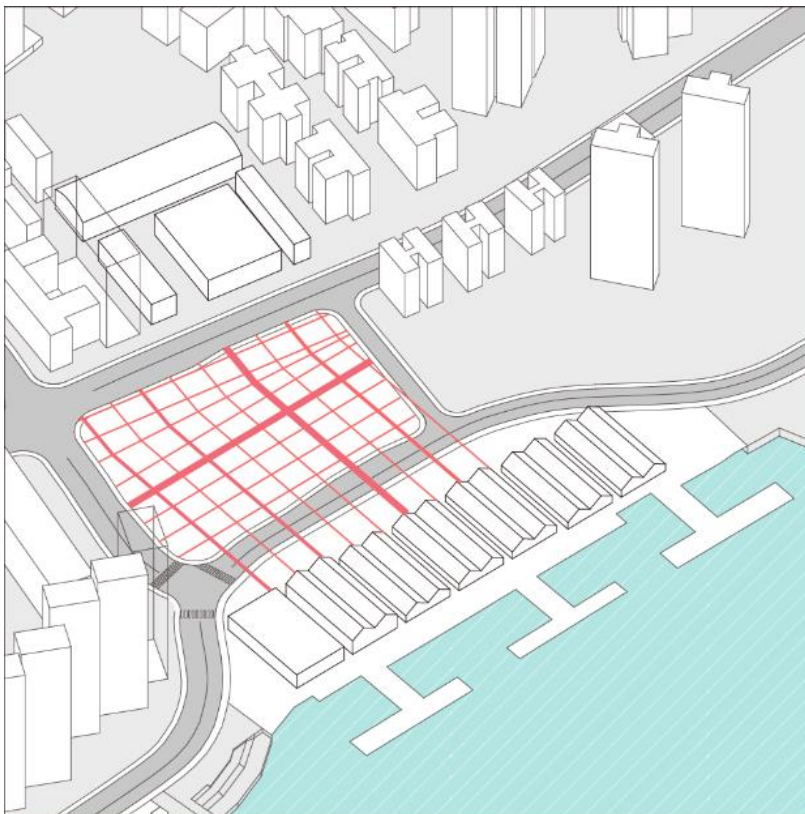
(2) To continue the spatial fabric of the industrial heritage

The plot for new construction is located in the middle of Taikoo W&W Area and Zhongchuan Commercial Center. By using the spatial texture of industrial heritage and the industrial remains to generate the axis and grid to control the form of the new building, the historical spatial context is able to continue in the modern city, and forms landscape corridors, so as to strengthen

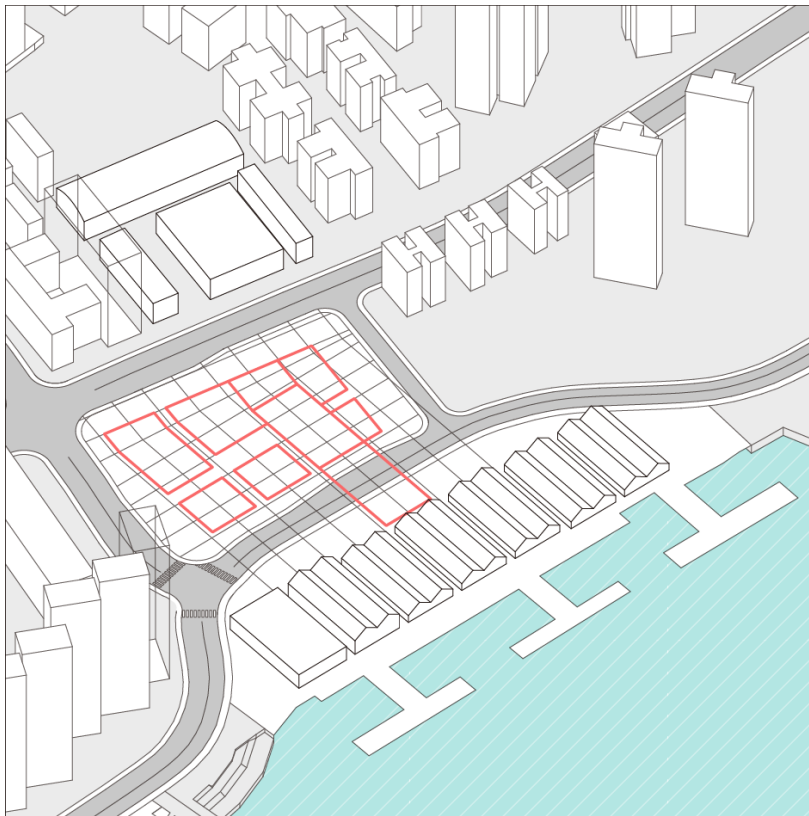
the sight connection between the city, industrial heritage and the waterfront, and to further introduce the historical landscape into the inner city.



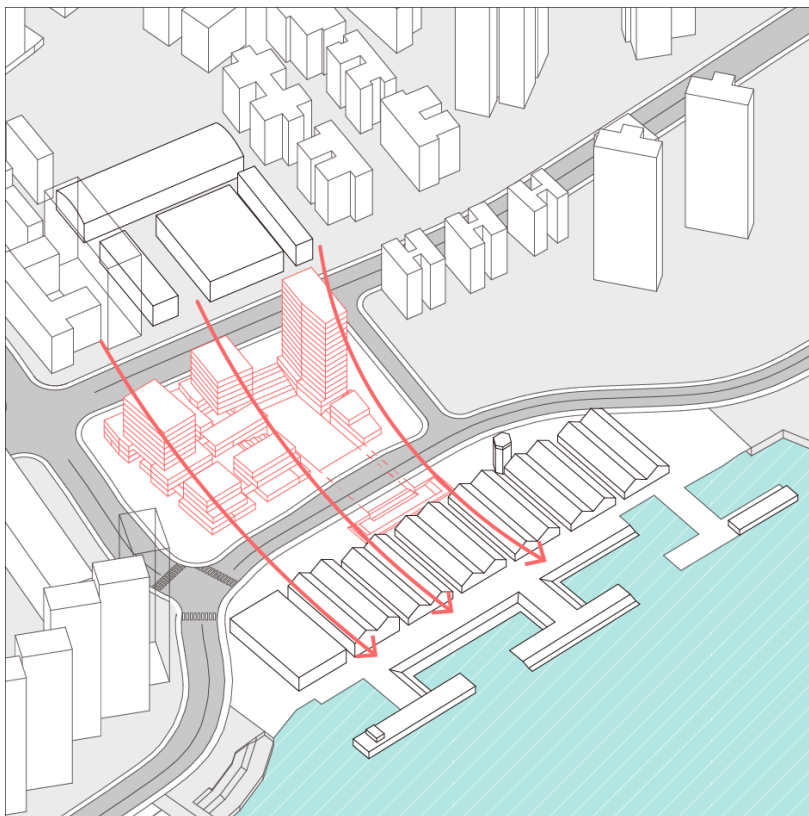
a) confirm main axis



b) generate the control grid



c) generate architectural plan



d) generate volumes

Fig 6-8 Diagram Analysis of Continuing the Urban Fabric (Source: by author)

(3) To materialize the historical and cultural context of industrial heritage

For cities, industrial heritage not only has the landscape and reuse value at the material space level, but also contains the intangible historical and cultural value. However, spiritual culture is only an intangible abstract concept, which is difficult to be understood by urban residents. Therefore, it will be an effective way to continue the historical and cultural context of industrial heritage by looking for substantial carriers on different scales to present the intangible spiritual culture to citizens in tangible material images.

On the architecture scale, new functions are placed to create more linkage with the history. Since the Taikoo warehouses used to store grain, cotton and daily necessities, the project will incorporate the functions of creative studio and market for food and handicraft. In addition, from the historical function of storage, as a place for modern book storage, the community library also has a certain relationship with the warehouse history. On both sides of the main public plaza of the site, scattered cultural exhibition halls are arranged to introduce the history and culture of waterfront industrial heritage into the city through activities such as historical scene restoration and melodrama. In addition, the old warehouse building is used as the form and material reference of the new building to promote the harmonious transition of the old and new architectural landscape.

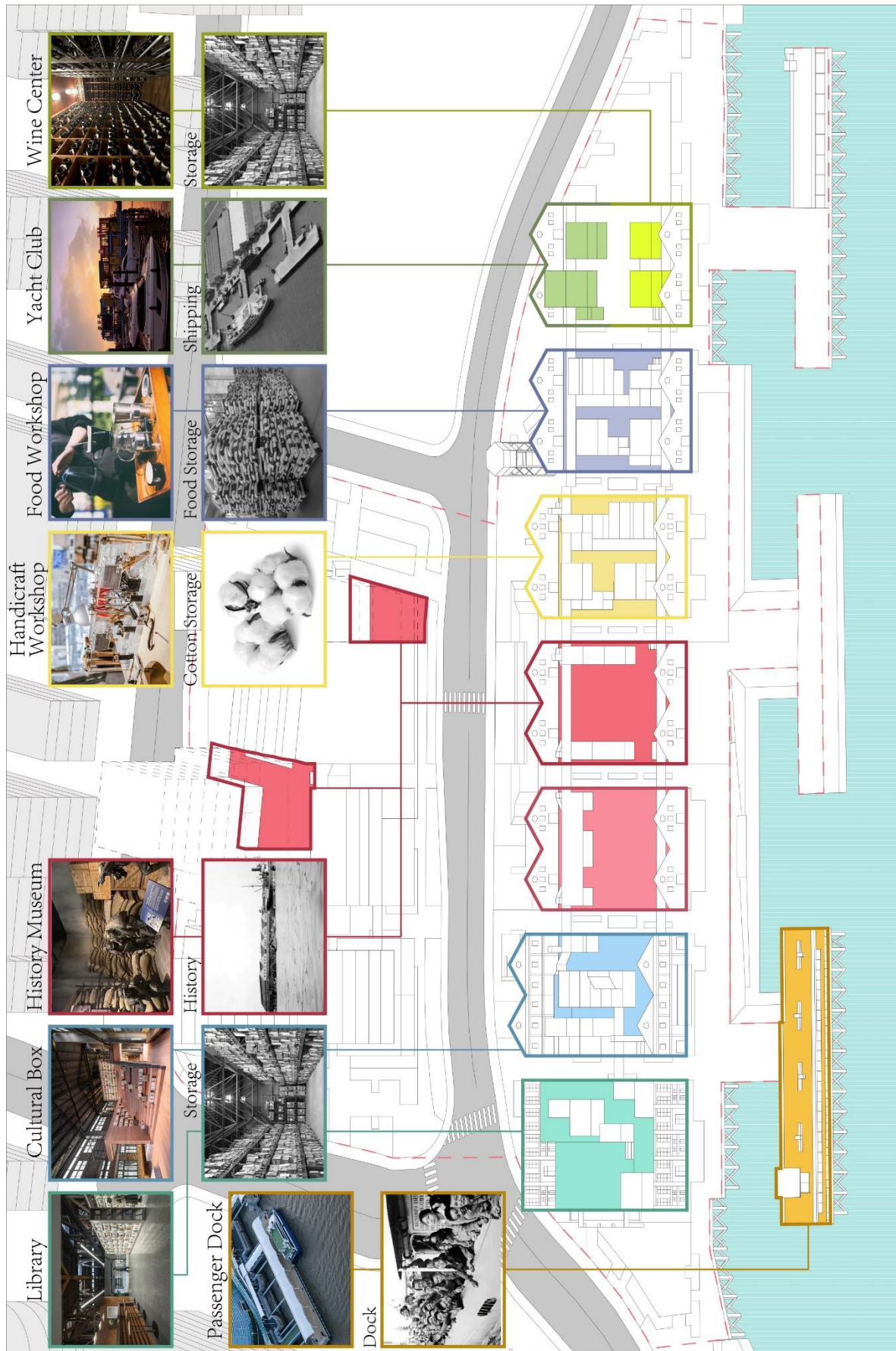
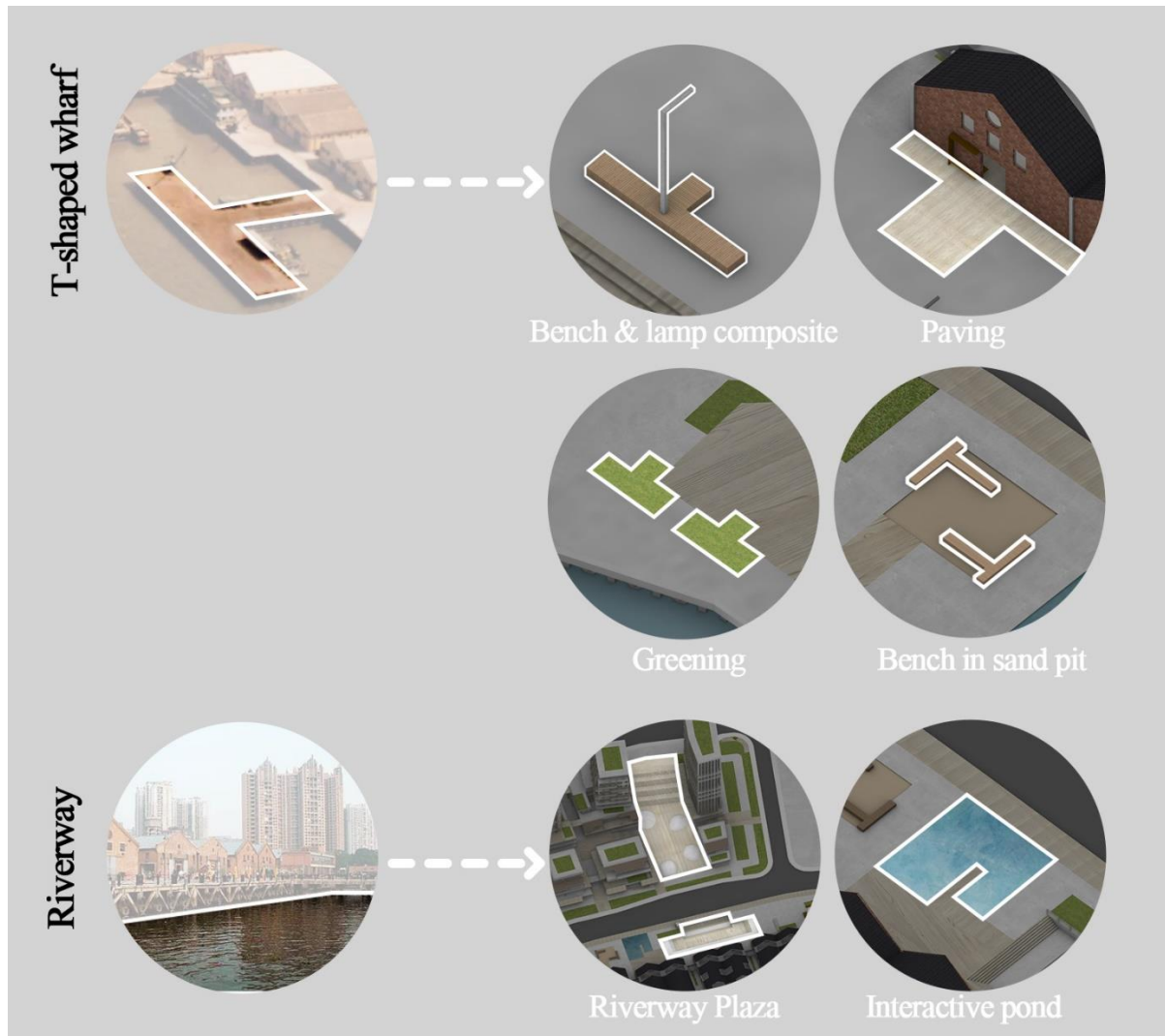
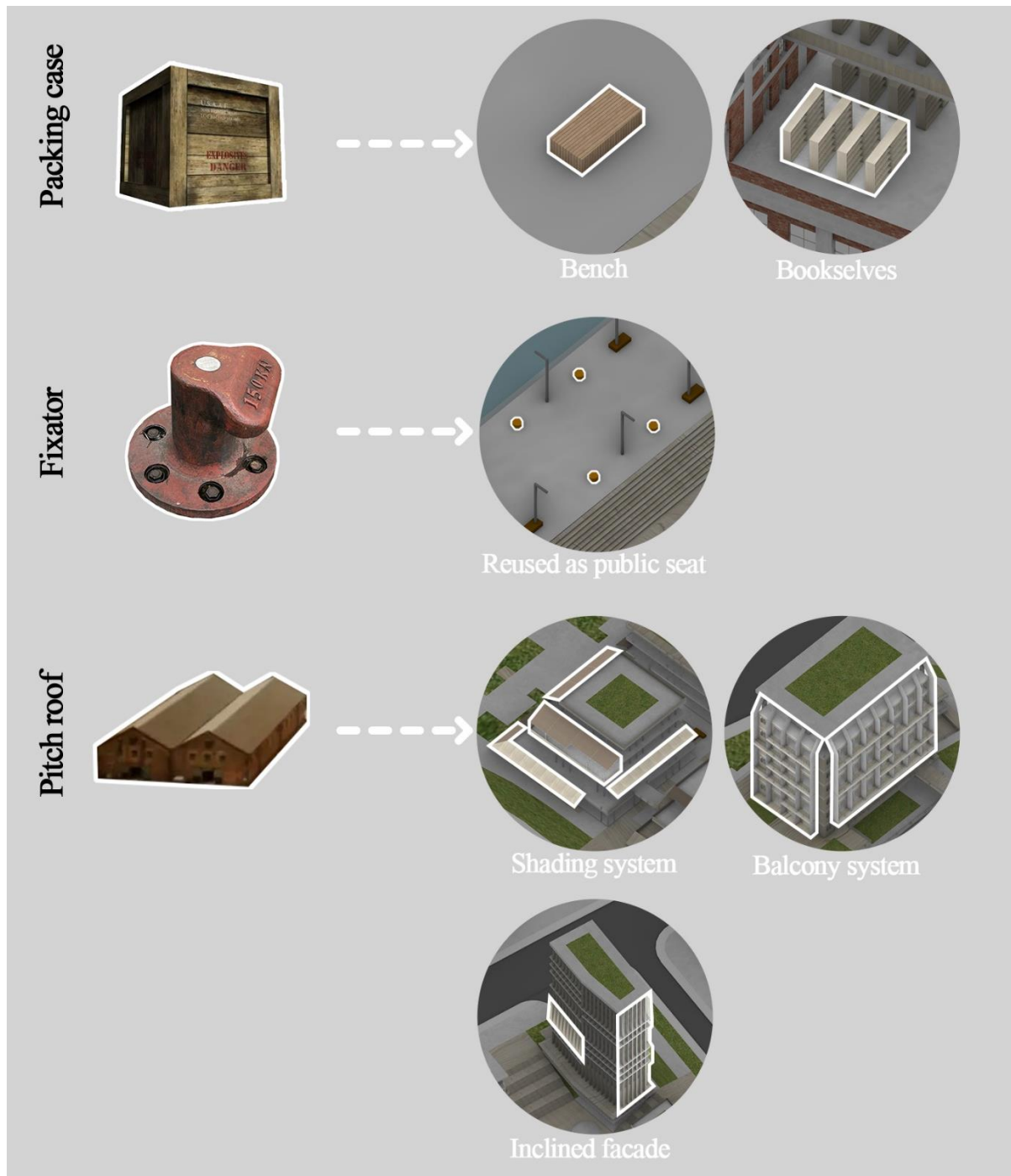


Fig 6-9 Analysis of History-related Function Arrangement (Source: by author)

Finally, on the scale of urban furniture, the historical scene is restored by retaining most of the original cement floor and industrial structure of the riverside space, and the form, material and color of the old warehouse buildings and other industrial structures are extracted for the design on new public seats, street lamps and ground pavement, so as to increase the integration of the old and the new on the most perceptible scale of human.



a) T-shape wharf and riverway



b) fixator and pitch roof

Fig 6-10 Translation of Industrial Elements in Urban Furniture and Architecture Design

(Source: by author)

6.4.2 Multi-layered Transportation System

(1) To enhance the public transport system

The walking distance between the site and the nearest Shayuan metro station is still far away. However, as most bus stops are located on the south side of Gexin Road, and there is a lack of east-west branch links between Gexin Road and Huandao Road, the public will have to walk a long distance to reach the site if they choose bus for transportation. Therefore, the addition of east-west pedestrian paths within the site and an underground level passage to get through the 22-metre wide Huandao Road will facilitate the use of public transport for people walking from bus stops to Taikoo W&W Area, thereby enhancing the public accessibility of the site.



a) current walking route



b) designed walking route

Fig 6-11 Walking Route Analysis (Source: by author)

Secondly, considering that the back channel of the Pearl River is rich in waterfront industrial heritage, the Guangzhou Municipal Government advocated the regional renovation of the industrial heritage in the planning document, while the Haizhu District government also proposed the vision of constructing the industrial heritage tourism route in the zoning planning. The design of the water transport will link the site to other industrial heritages and urban area on both sides of the river, further strengthening the relationship between Taikoo W&W Area and the surrounding city. Therefore, it is reasonable and necessary to take water transportation into consideration in the design of multi-layered public transportation system. In this scheme, a passenger terminal is built on the northernmost T-shaped pier, which provides the possibility for adapting into the water transportation routes in the future.

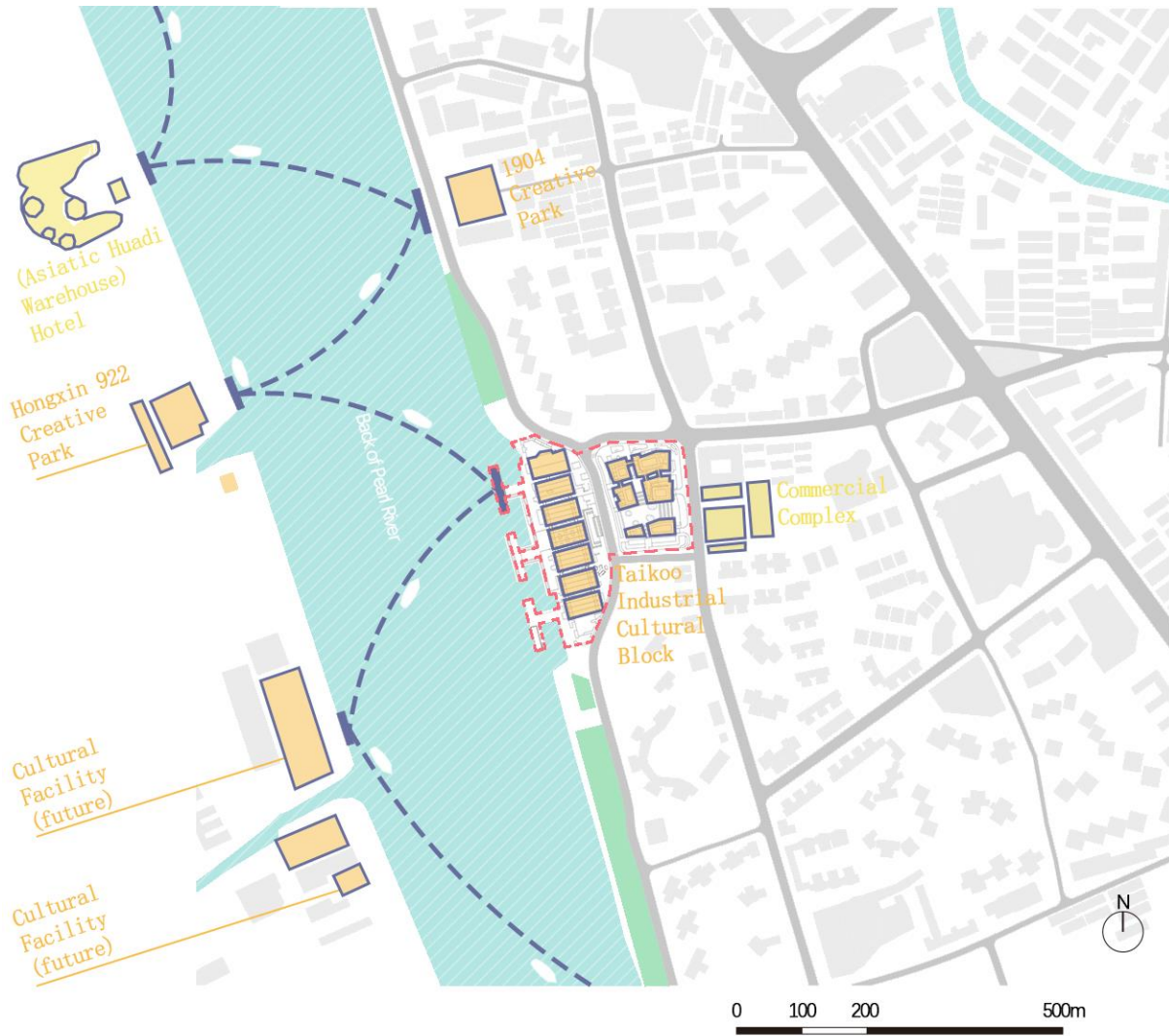
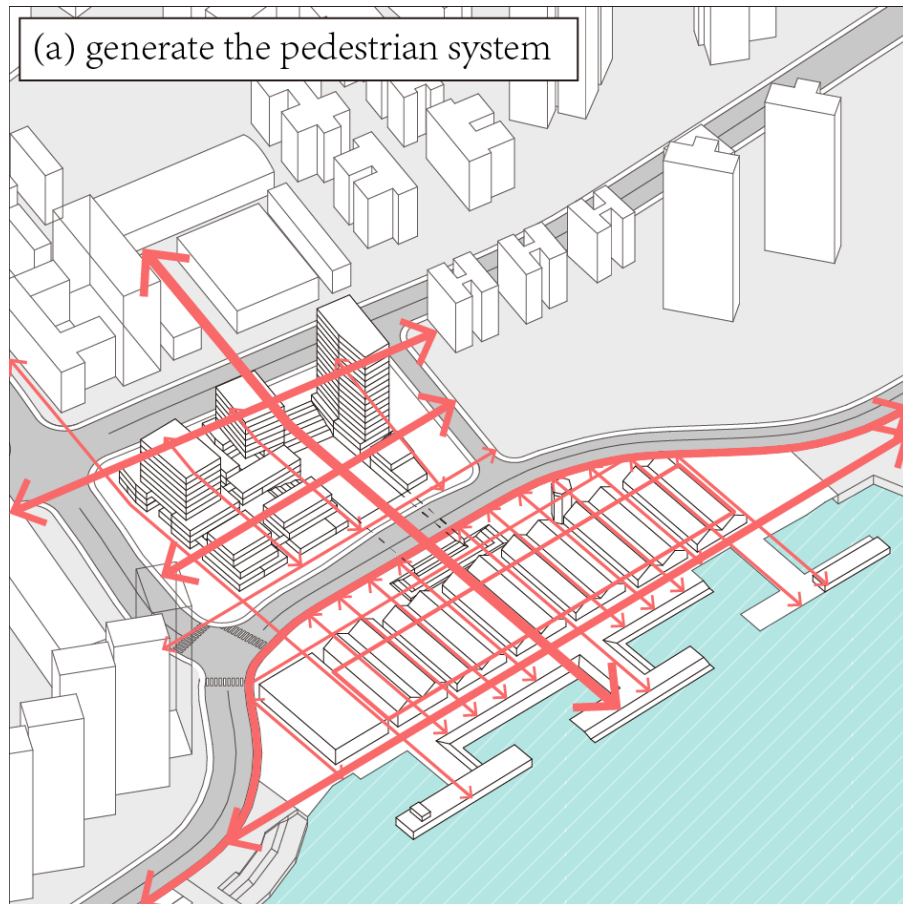


Fig 6-12 Marine Traffic Analysis (Source: by author)

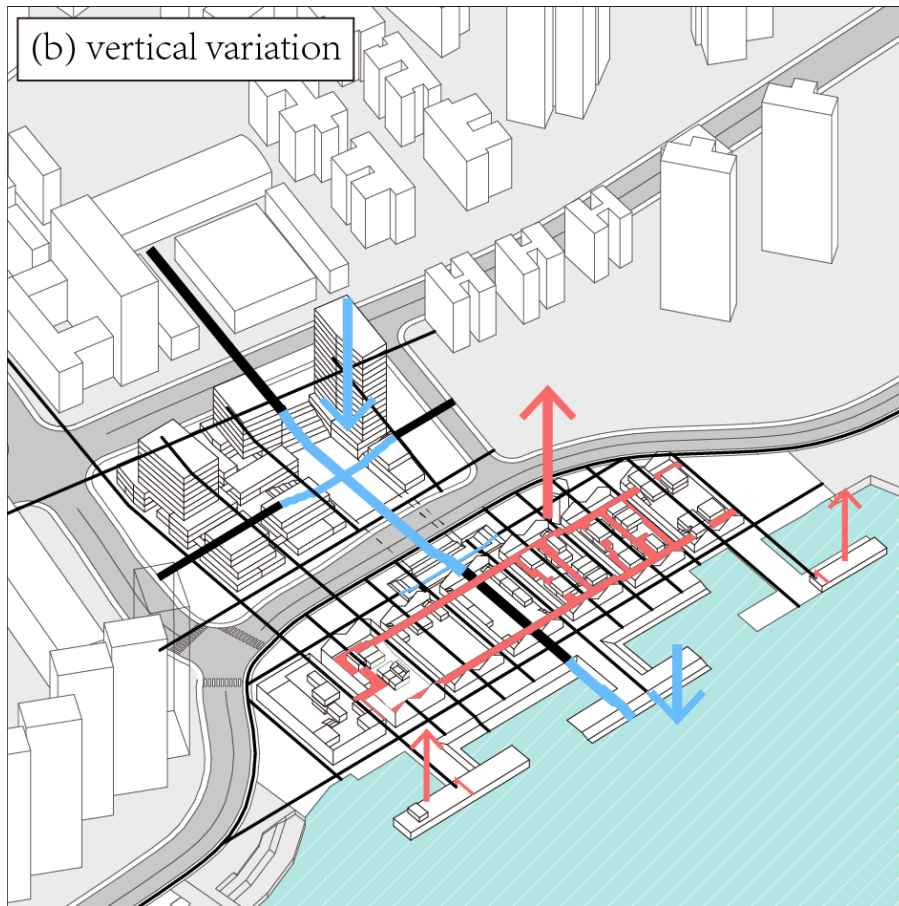
(2) Continuous and diversified walking system

It is an effective way to improve the accessibility and openness of the site to enhance the continuous and rich walking experience for people in the directions of along and perpendicular to the river bank. Firstly, a grid of pedestrian routes with a certain density is established, and the continuity and diversity of walking experience is realized through the route changes in the vertical direction. The main pedestrian route connecting the city, industrial heritage and the waterfront in the east-west direction uses the underground space to pass through the Huandao Road, and is connected with the first-floor corridor connecting 7 old warehouses inside. Moreover, the public platform near the water is connected in the riverside space. In the

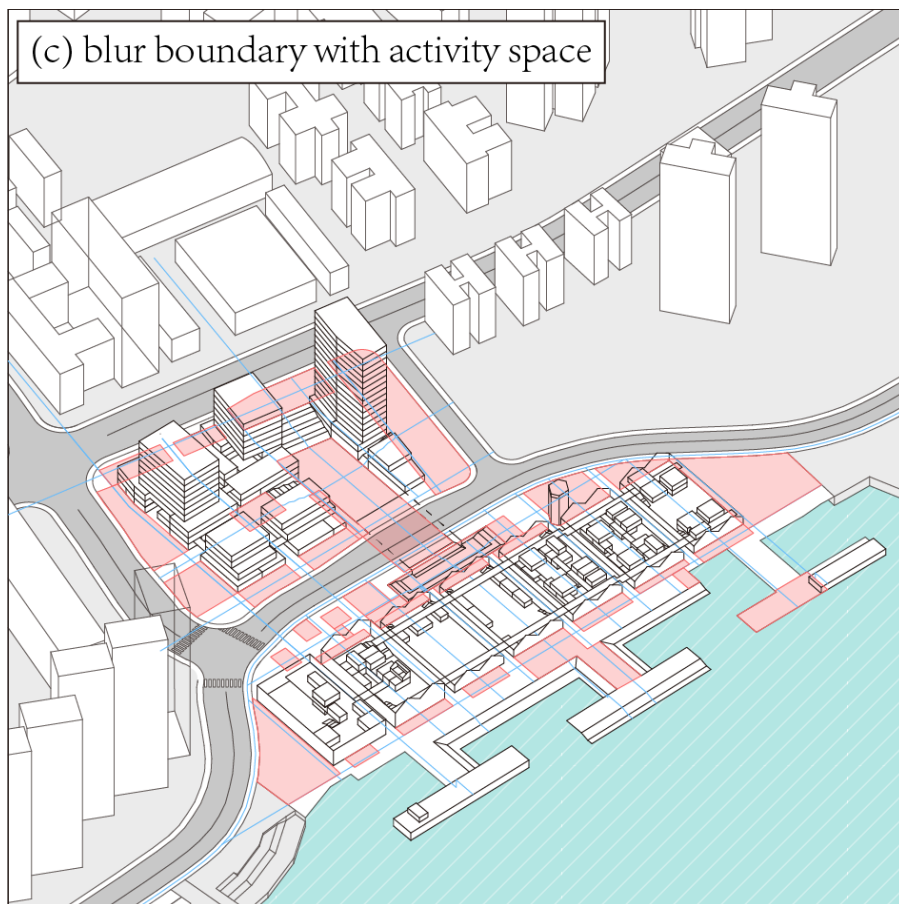
horizontal direction, through the connection between the pedestrian road inside the site and the urban greenway along the river, the widening of the walking space will integrate the functional space only used for walking with activity space and natural landscape, which can improve the utilization rate of space and further enrich people's walking experience. Lastly, emphasis will be placed on the design of barrier-free facilities to provide convenience for people with mobility difficulties and to enable them to experience the rich and interesting sightseeing routes.



a) step1



b) step2



c) step3

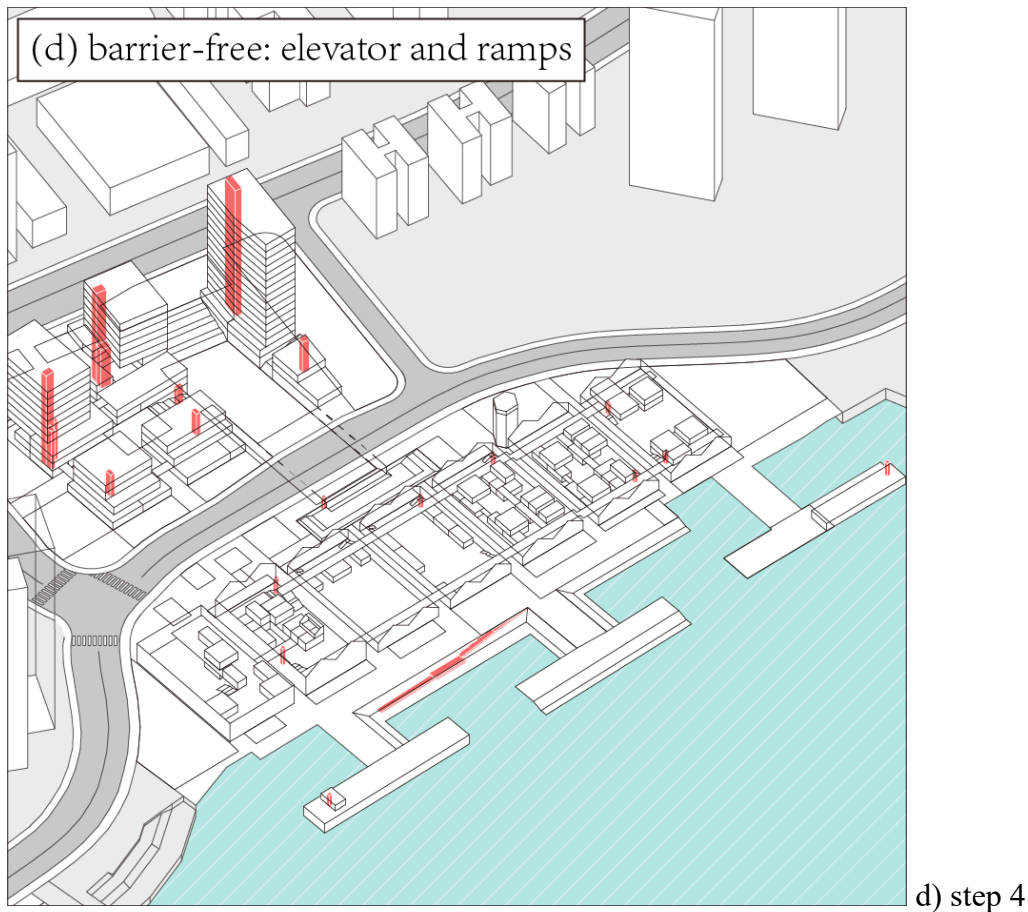


Fig 6-13 Pedestrian System Analysis (Source: by author)

(3) The traffic flow gives way to the walking experience

In the present situation, the Huandao Road is the main road to enter and exit the Taikoo Warehouse & Wharf Area. The entrances and exits of the restaurant private parking lot on the north side of the warehouse complex, the Taikoo W&W Area open parking lot on the east side of the warehouse, and the vertical parking lot on the south side of the Phase II lot are all distributed on the Huandao Road. Such arrangement not only easily causes congestion in the Taikoo Area section of Huandao Road, but also causes great trouble to the pedestrians' safety and walking experience. In addition, on the east side of the square there are chaos of mixed people and vehicle circulation. Therefore, the new scheme will use the underground space of the plot of the second phase renewal as an underground parking lot to provide ample parking services for visitors, staff, office workers and residents in Taikoo Warehouse & Wharf Area.

Moreover, the entrance and exit of the parking lot are placed on Gexin Road, which provides a safer walking environment for pedestrians while relieving traffic pressure on Huandao Road.

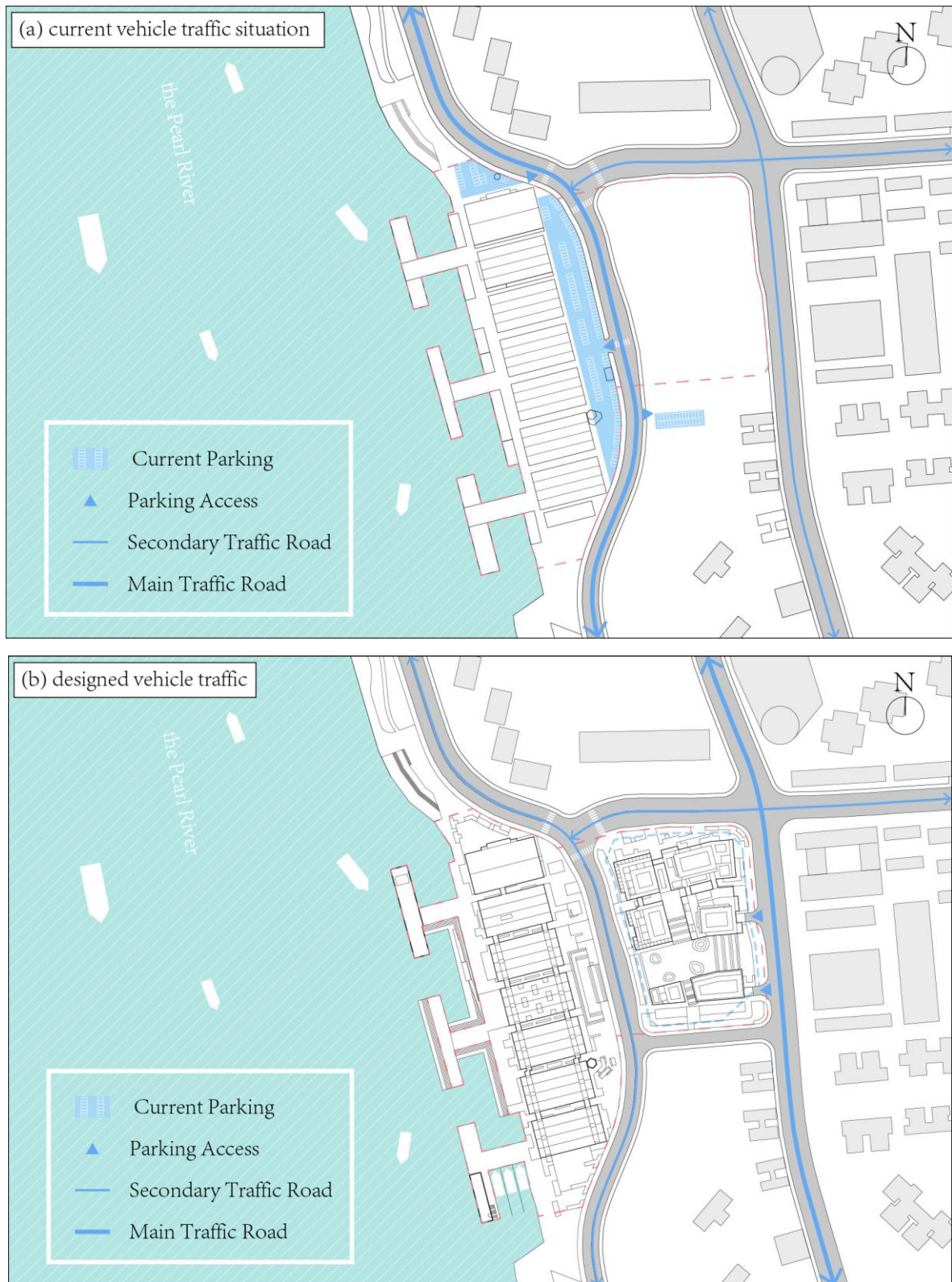
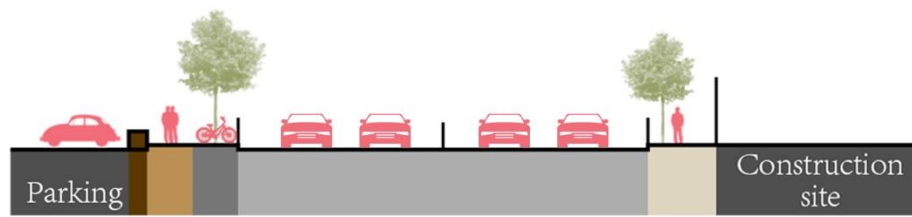
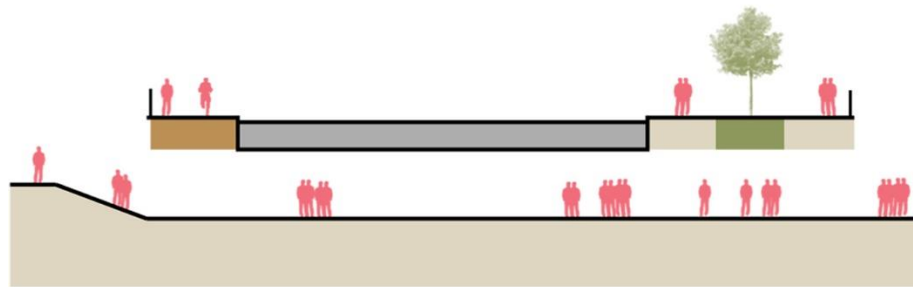


Fig 6-14 Vehicle Traffic Analysis (Source: by author)



Current Huandao road section



1 - the Riverway Plaza



2 - interactive landscape and indoor space



3 - ample open space



Fig 6-15 Improving Continuity in Road Section (Source: by author)

6.4.3 Mixed-function Land Use

Mixed-function land use can simultaneously take care of the needs of different groups of people in the city, provide them with the possibility of meeting and communication, and improve the inclusiveness of the site.

(1) Urban block scale

On the urban block scale, the functional mix of land use is mainly manifested in the functional connection between the block and the surrounding blocks and the diversity of the inner function of the block. The surrounding blocks have relatively single functions, mainly enclosed residential communities and catering and retail along the street. The residential density is quite high while there is a lack of public service facilities. Therefore, by adding sports, elderly services, children services and other community service facilities as well as public activities such as culture and recreation in Taikoo Warehouse & Wharf Area, the overall functional structure of the urban environment can be relatively refined. In addition to public functions, urban functions such as youth apartments, offices (including cultural and creative industries) and businesses are placed inside the site to ensure the safety and continuous vitality of the industrial heritage block during the day and night. At this point, Taikoo Warehouse & Wharf Area will become a community and activity center shared by residents in and around the block.

The functional mixing mode of Taikoo Warehouse & Wharf Area on the urban block scale is mainly manifested in the horizontal spatial dimension of mixing. Industrial heritage and waterfront area have public attributes at the city level, and their main functions can be cultural, recreational and creative industries for all citizens. The eastern side of the site, which is closest to the surrounding residential area, is more suitable for functions of youth apartment, office and community service that serve the surrounding community only. Between them, commercial and cultural activities serve as transition and connection. The overall function distribution shows a weakening trend of publicness from waterfront area to the inner city.

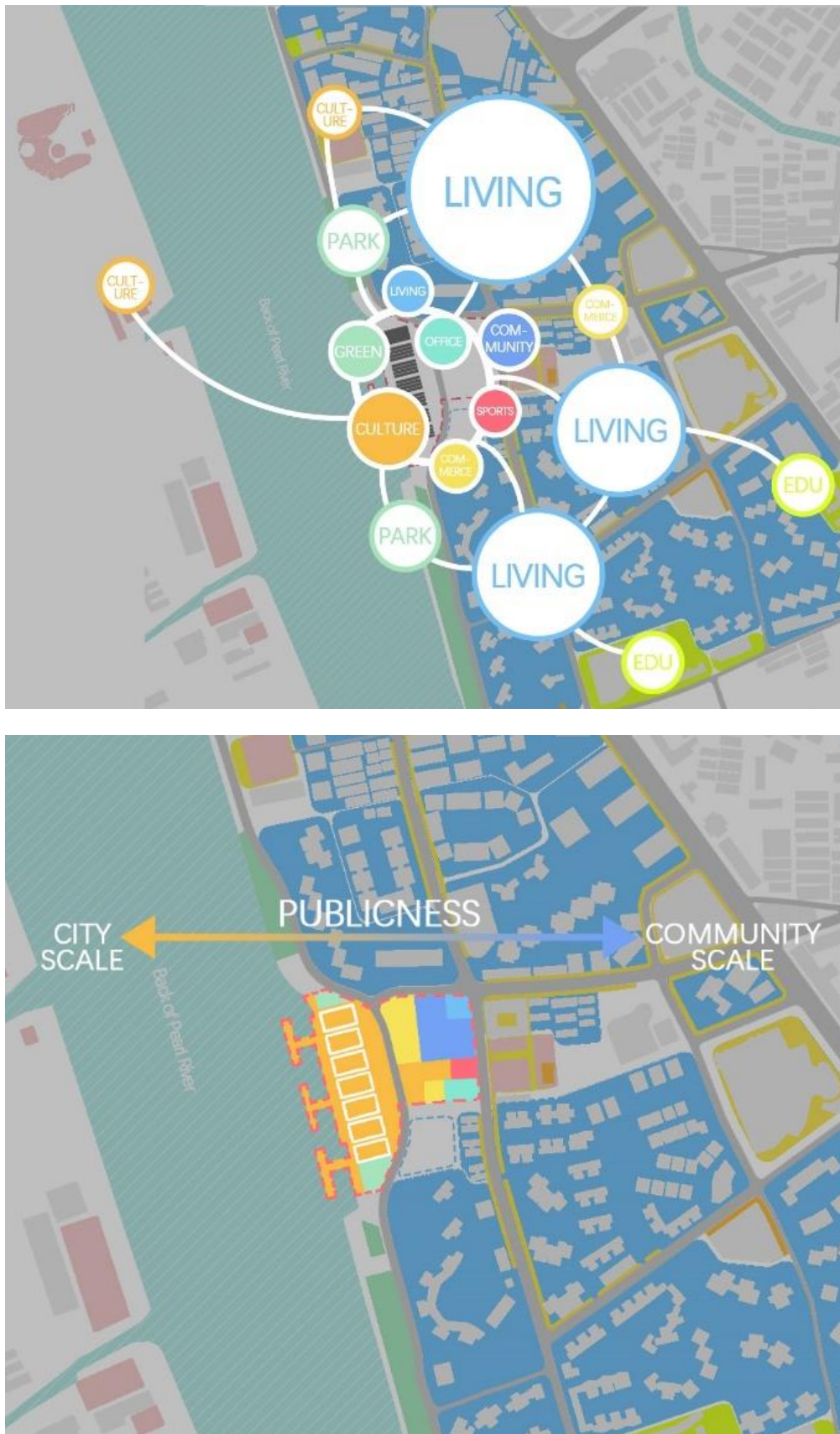
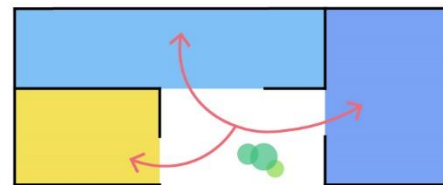


Fig 6-16 Mixed-use Analysis in Block Scale (Source: by author)

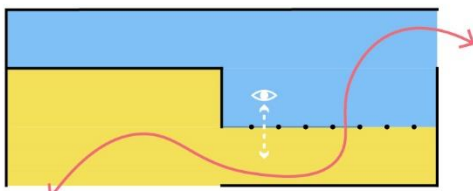
(2) Architecture scale

The architecture in Taikoo Warehouse & Wharf Area is mainly composed of the old warehouses in the waterfront area and the newly built buildings in the eastern plot. The developable intensity of old warehouse is relatively low, while the development intensity of new building is higher. Therefore, the demand of old warehouse for functional mixing is mainly in horizontal spatial dimension, while in new buildings functions mix both horizontally and vertically. The closer the space is to the ground, the more accessible it is. Therefore, public facilities can be arranged in the lower levels while apartment and office, which have certain requirements for privacy, can be placed above. Different public functions at the same height can be mixed in the horizontal direction through the scattered spatial arrangement to increase the richness of the spatial layers.

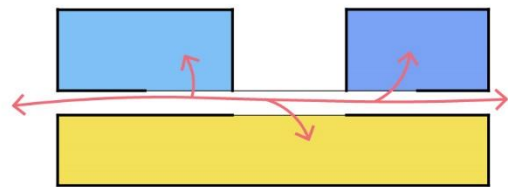
· Horizontal mix



(a) by shared courtyard

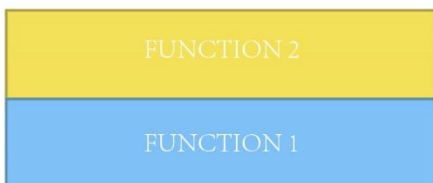


(b) by window and access

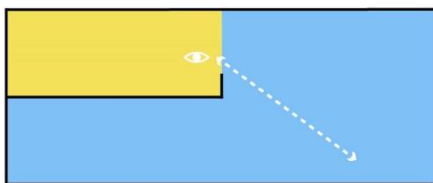


(c) by corridor

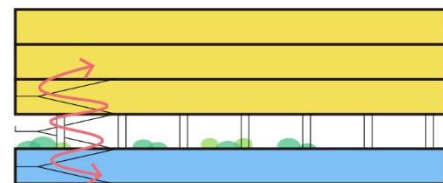
· Vertical mix



(a) access connection



(b) visual connection



(c) buffer zone connection

Fig 6-17 Architectural Level Function Mix Diagram (Source: by author)

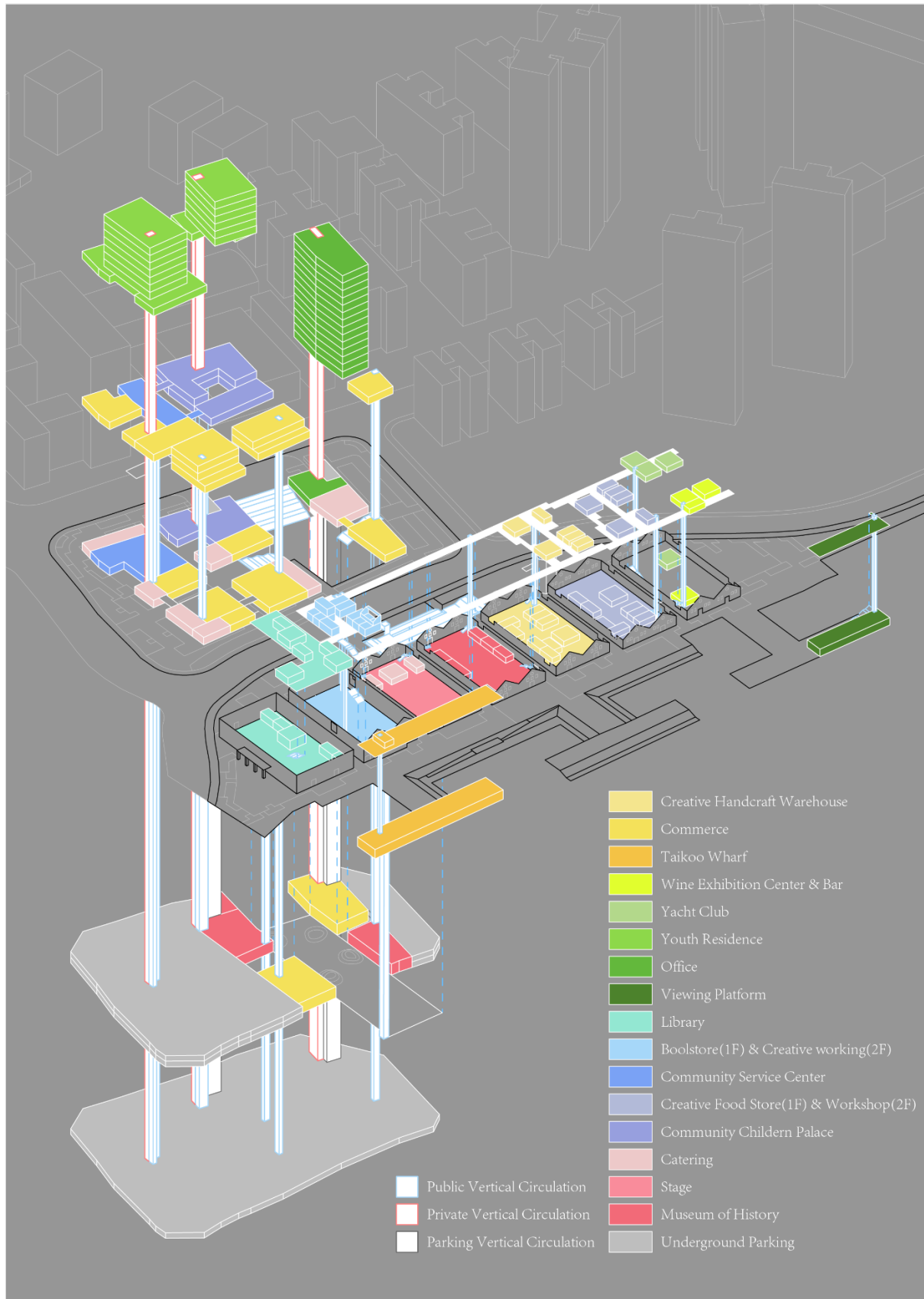


Fig 6-18 Architecture Function Analysis (Source: by author)

(3) Open space scale

The open space system has problems of single functionality, lack of public seatings and greenery. Therefore, the spatial quality of open space can be improved through mixing function in spatial and temporal dimensions, so as to improve the openness and inclusiveness.

In terms of vertical function mix, the sunken plaza named Riverway Plaza can carry watchable activities such as exhibitions, sports and performances. The peripheral stairs can become a space for people to rest and socialize. The platform in the riverside, which is closer to the water surface, provides a closer water interacting experience.

In terms of horizontal function mix, starting from the activity needs of different groups, more refined function organization in open space could be realized through the design of pavement, greenery and urban furniture, providing tourists, exercisers and the elderly more public places to res, act and view.

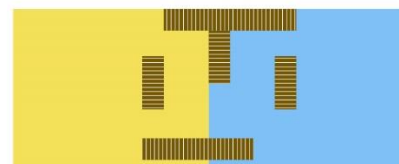
· Horizontal mix



(a) by pavement

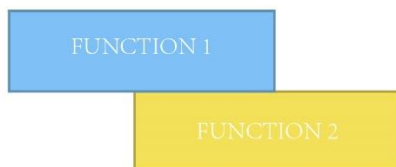


(b) by greenery

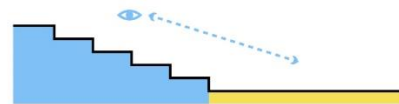


(c) by urban furniture

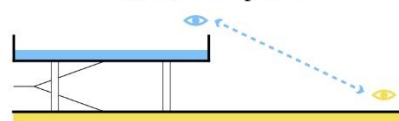
· Vertical mix



(b) interactive water landscape



(a) sunken plaza



(c) observation platform

Fig 6-19 Open Space Function Mix Diagram (Source: by author)

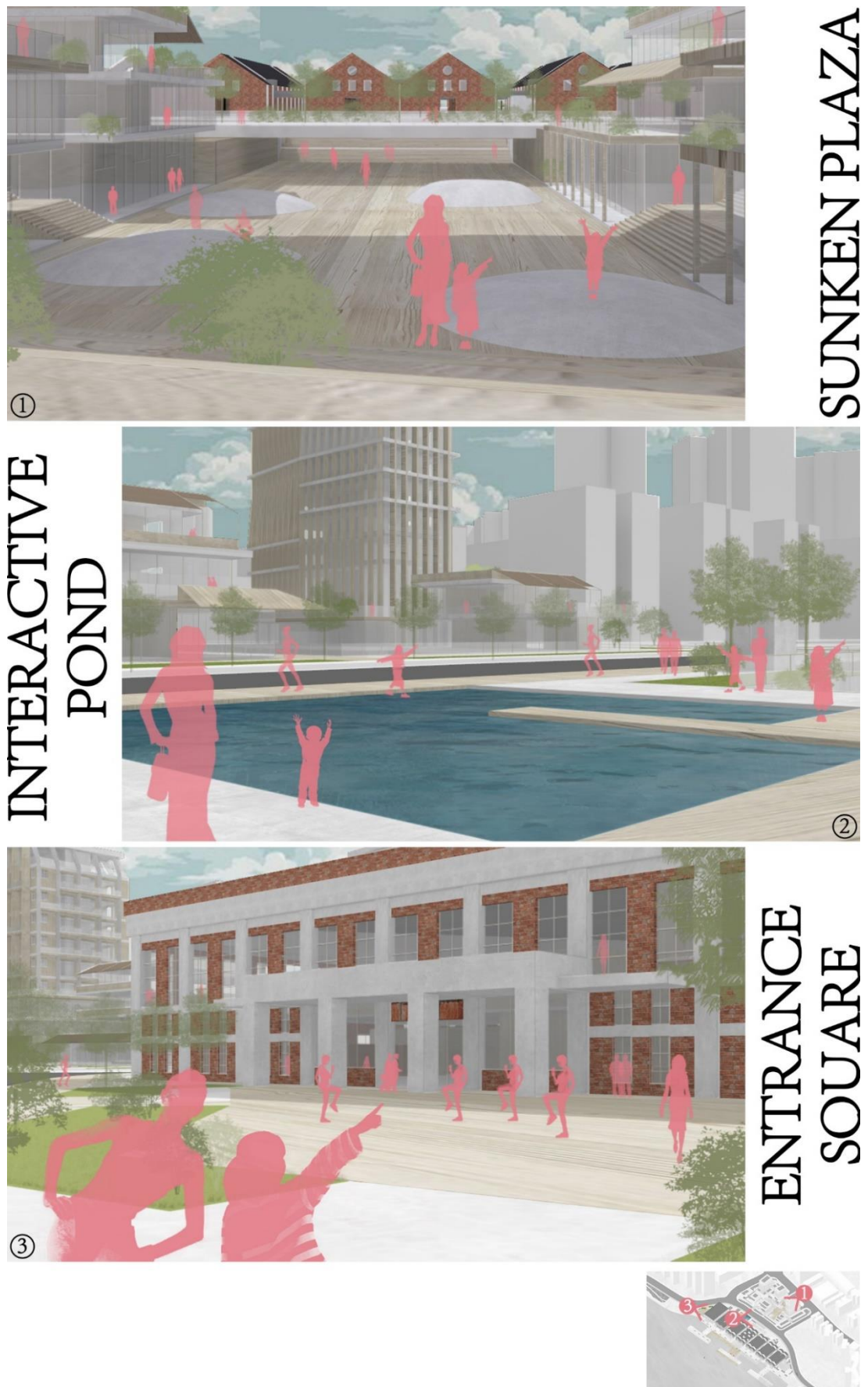


Fig 6-20 Mixed-use Open Space Renderings 1-3 (Source: by author)

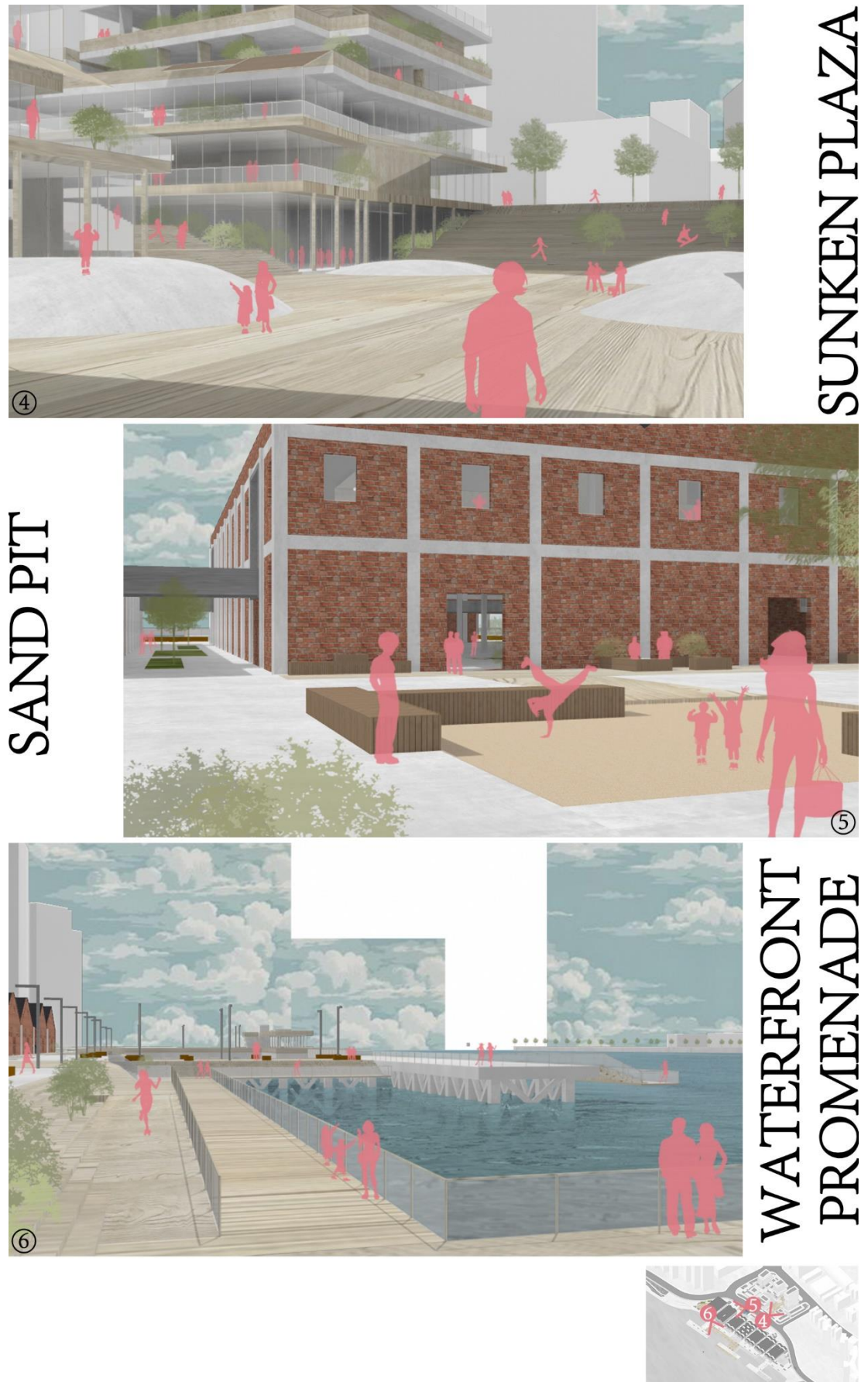


Fig 6-21 Mixed-use Open Space Renderings 4-6 (Source: by author)

The diversity of activities in the open space is also reflected in the temporal dimension, as the activities in the square change at different times of the day and the types of people involved vary. From the morning exercise activities of elderly residents, to the commercial, leisure and cultural activities of young office workers and middle-aged tourists during the day, to the entertainment and performances for all citizens at night, a variety of activities are staged in the same space.



a) the elderly doing sports in early morning



b) cultural activities in afternoon



c) the youth doing sports at night

Fig 6-22 Diverse Activities in the Entrance Square in Different Time (Source: by author)

(4) Activities of different groups at different times

From the perspective of people, different types of users represented by elderly residents, young residents, family residents, elderly tourists, young tourists and family tourists can find their own activity space whenever they arrive Taikoo Warehouse & Wharf Area.

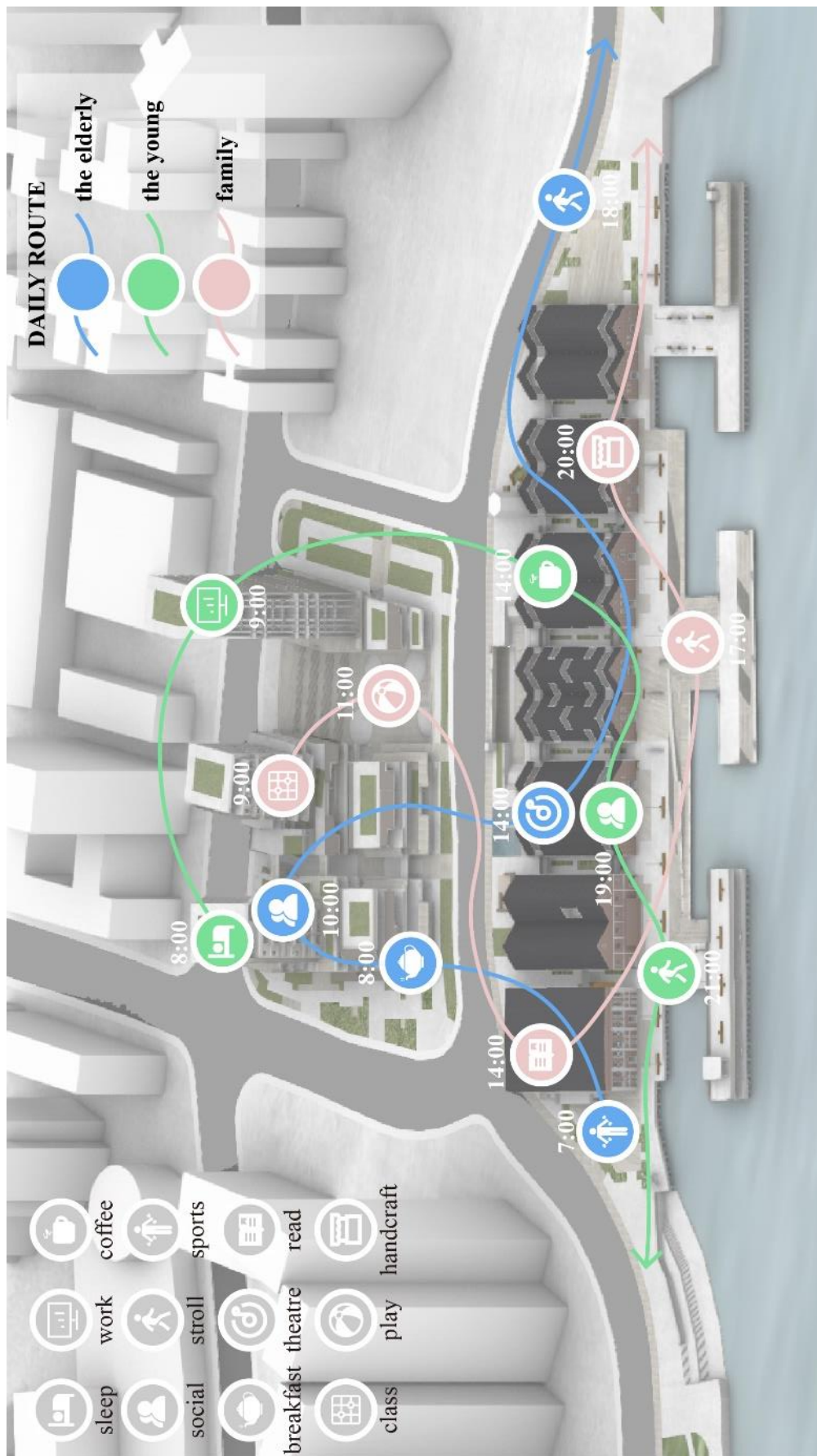


Fig 6-23 Analysis of Activities for Residents (Source: by author)



Fig 6-24 Analysis of Activities for Tourists (Source: by author)

6.4.4 Spatial Form of Flexible Interface

The spatial types of the site mainly include water body, open space, industrial heritage and urban architecture. Compared with the interior of the space, the contact interface between different types of space has more layers of landscape resources. By broadening the linear and single-direction interface into a more flexible planar space, implanting some functional facilities, and establishing certain visual continuity, the sense of separation between different spatial subjects can be resolved, the overall openness can be improved, and the landscape resources can be used in a more effective way.

(1) Between water and the waterfront open space

Water is the important landscape resource in the city. The main consideration in the spatial design of the revetment interface is to increase the landscape layers. The sunken horizontal platform allows people to watch the water and listen to the sound of the water in a closer distance while the higher observation platform provides people with a broader view of the river. The public seats facing the river provide people with the possibility to stay and experience the natural environment for a long time. Moreover, the original cement pavement and small-sized industrial structures allow pedestrians to feel the relationship between the freight terminals and the water in the city history, increasing the immersion of historical scenes and enhancing the continuity of site experience in temporal dimension.

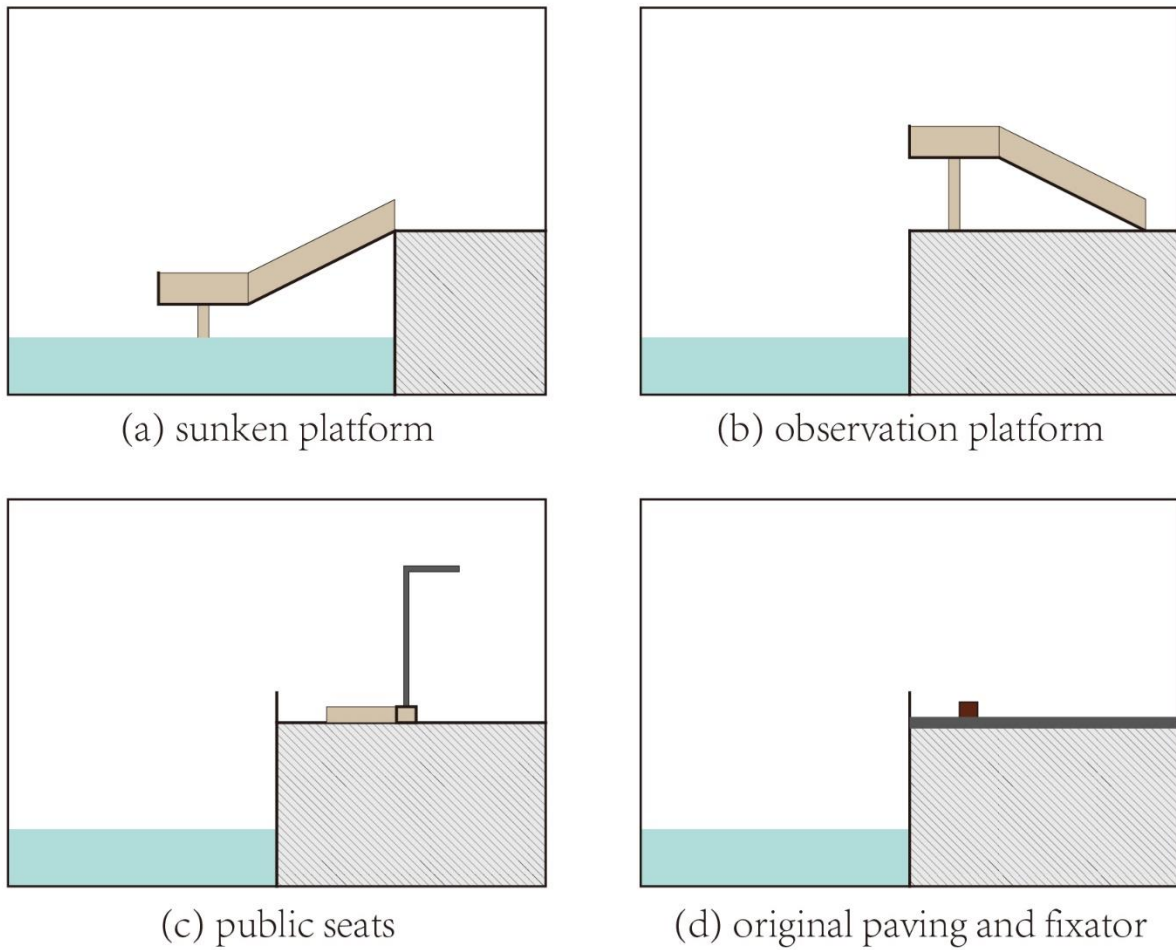
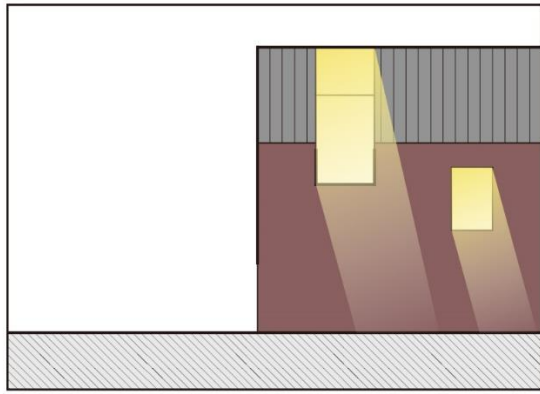


Fig 6-25 Typology of Interface between Water and Waterfront Open Space (Source: by author)

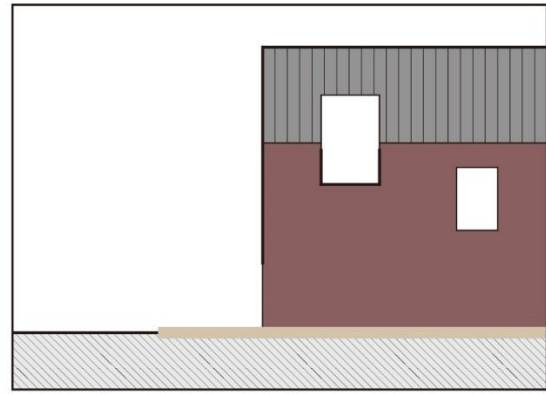
(2) Between industrial heritage and open space

Due to the red brick material and the installation of window shutters to block light from entering the warehouses, the relationship between the interior space of the industrial heritage and the waterfront and urban open space is disconnected. Therefore, part of the roof and windows can be changed into glass material to increase the brightness of the interior space of industrial heritage, so as to improve the openness and recognizability of the interior space. Secondly, by extending the interior wooden flooring to the outdoor area, people will be guided to walk between the warehouse and the open space on both sides more easily. The placement of landscape windows, dining windows or transparent public rest installation in some of the

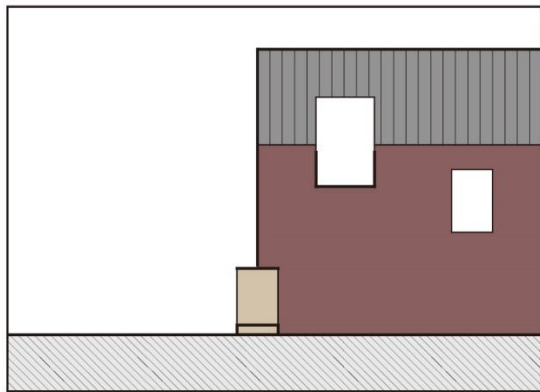
warehouse doors can strengthen the connection between inside and outside and encourage people to use and stay in the boundary space. By unifying the layout of indoor and outdoor greenery, it can also increase the sense of continuity between inside and outside space and guide people to explore in the overall area.



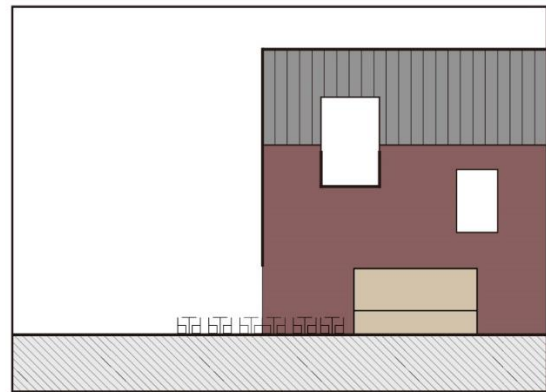
(a) openings on roof and window



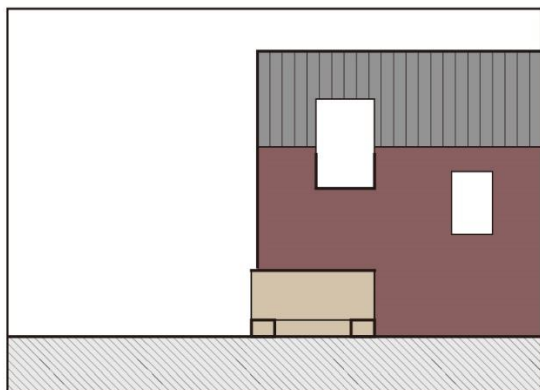
(b) continuing flooring



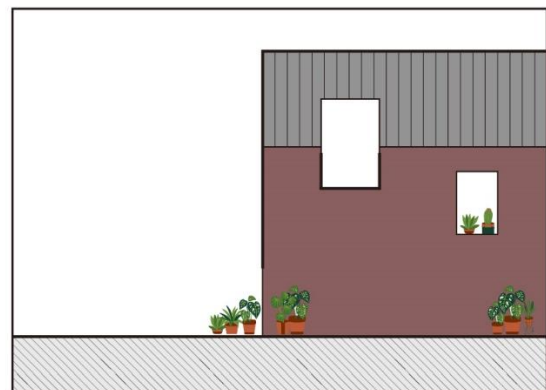
(c) public seatings



(d) dinning area



(e) dinning / serving box

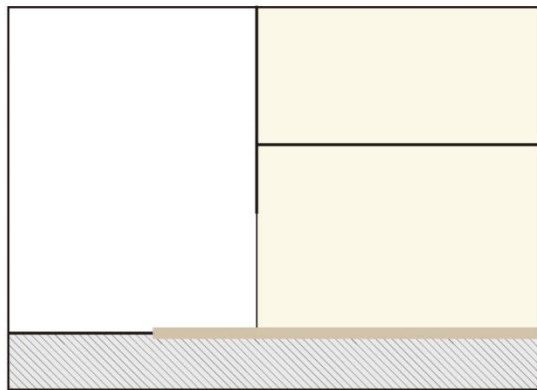


(f) unifying greenery system

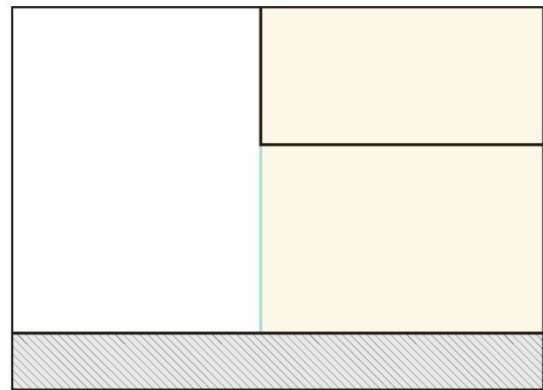
Fig 6-26 Typology of Interface between Industrial Heritage and Open Space (Source: by author)

3) Between new buildings and open space

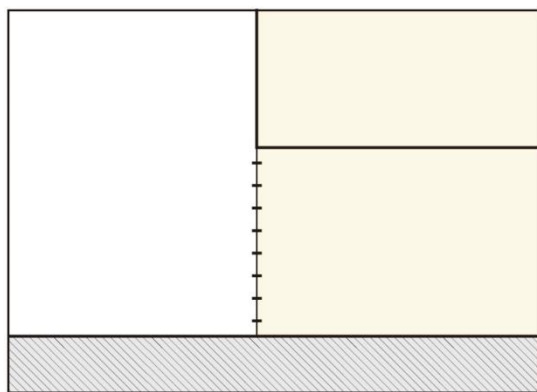
Compared with the old warehouses, the design of interface of new building can be more diverse and free. In order to maintain the continuity of the overall design approach of the site, the design strategy of the interface space for new building will be based on the transformation approach of the warehouse building. In the horizontal dimension, the outdoor paving can be extended to the indoor space, and the indoor functions can be extended to the outdoor. For example, the dining function can be set up both indoor and outdoor dining areas, and the community service center can also be set up connected indoor and outdoor activity areas. In the vertical dimension, floor-to-ceiling glass windows, permeable fences, plants and other transparent facade design elements can increase the connection between indoor and outdoor space in terms of sight and sound. Moreover, semi-open corridors and other transitional spaces can be arranged between indoor and outdoor space to achieve a more harmonious transition.



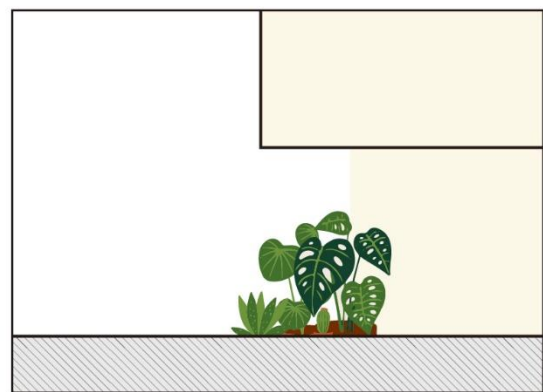
(a) continuing flooring



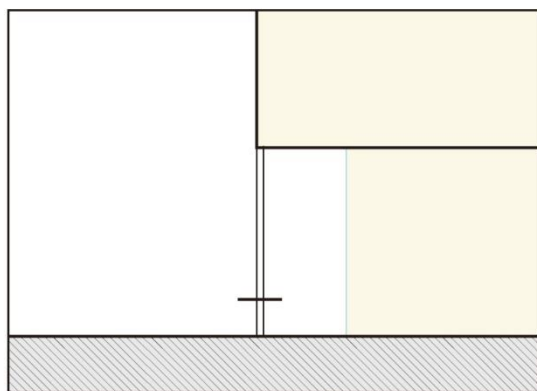
(b) floor-to-ceiling window



(c) permeable fence wall



(d) greenery as partition



(e) semi-open corridor with seats

Fig 6-27 Typology of Interface between New Building and Open Space (Source: by author)

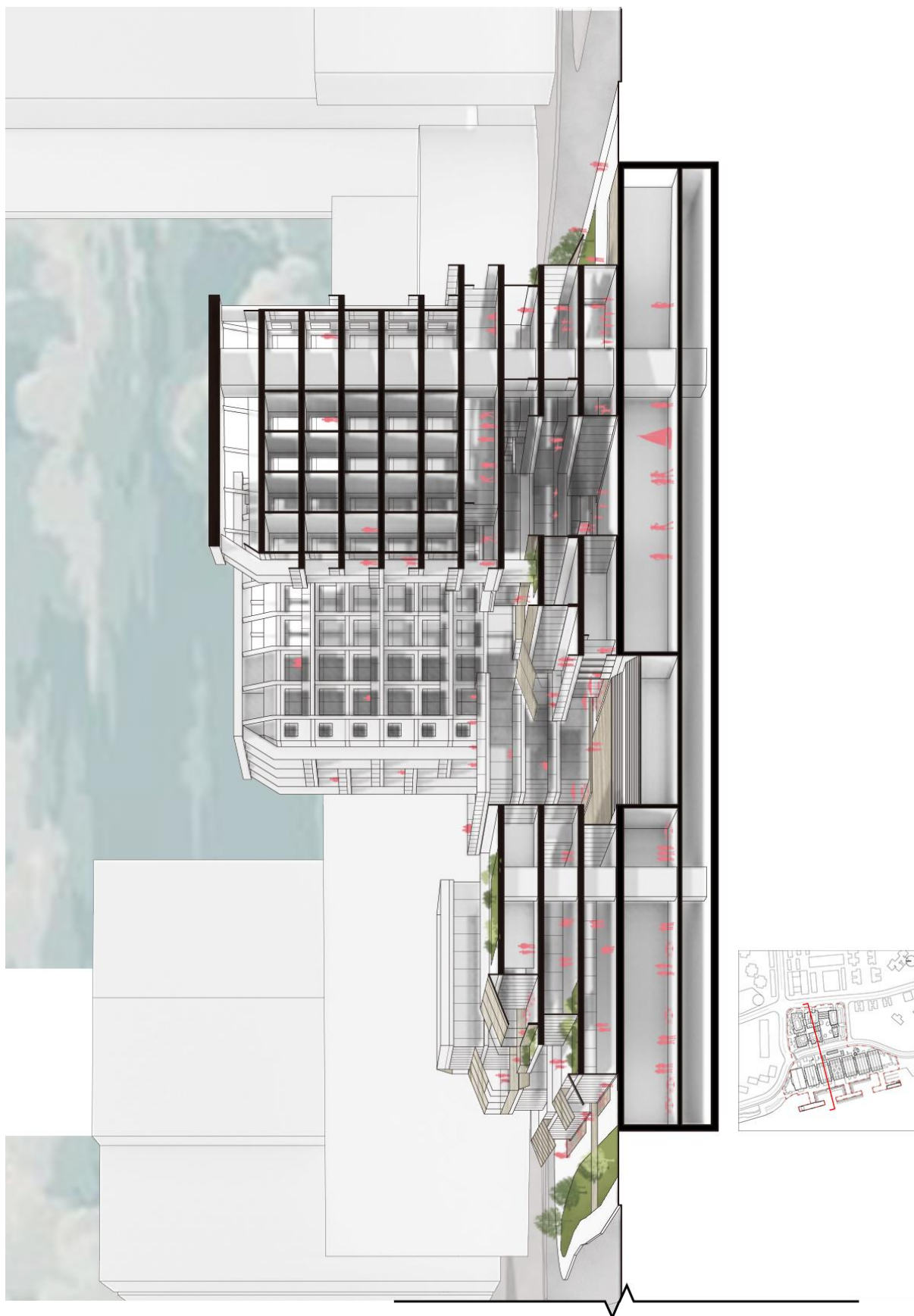


Fig 6-28 Section 1 of Taikoo Warehouse & Wharf Area (Source: by author)



Fig 6-29 Section 2 of Taikoo Warehouse & Wharf Area (Source: by author)

6.5 Summary

The main content of this chapter is to propose specific renewal strategies for Guangzhou Taikoo Warehouse & Wharf Area, a typical case of Guangzhou waterfront industrial heritage, based on the concept of publicness. Based on the analysis of Taikoo W&W Area and its surrounding urban environment, it is proposed to build this area into an industrial heritage cultural block with two functions of serving surrounding urban areas and showing industrial history to the city. And through four spatial design strategies of protecting and extending the industrial heritage of the site, establishing the multi-layered traffic system with pedestrian priority, implanting diverse and mixed functional structures for the architecture and open space, and softening the interface between different spaces, the publicness of the site, especially the industrial heritage and the waterfront space, is improved. It not only provides multiple levels of daily social and activity space for surrounding citizens, but also enables foreign tourists to get more diverse and immersive industrial history and culture experience and interactive experience with the Pearl River.

Conclusion and Prospect

Conclusion

Industry used to be the catalyst of city development, and the industrialization of city is an important stage of human civilization development. However, due to the continuous expansion of the urban layout, the old waterfront industrial zone located in the center of the city can no longer meet the needs of urban life. As China gradually entered the stage of urban development of the stock planning, waterfront industrial heritage which has the compound value of nature, history and culture has gradually gained attention from the society. However, in the field of waterfront industrial heritage renewal, China is still in the exploration stage, and the research progress is uneven around the country. Although Guangzhou has abundant waterfront industrial heritage resources, there are few relevant theoretical studies, and the completed renewal practice has shown a variety of universal problems.

Therefore, this paper firstly studies the theoretical and practical cases of urban waterfront renewal, waterfront industrial heritage renewal and publicness concept at home and abroad, and in Guangzhou. Secondly, it sorted out and analyzed the main characteristics and general situation of protection and utilization of Guangzhou waterfront industrial heritage. After that, Guangzhou Taikoo Warehouse & Wharf Area is chosen as the typical case of Guangzhou waterfront industrial heritage, and a more detailed investigation and analysis is conducted on the area and its surrounding. Finally, based on the concept of publicness, the overall renewal strategy for Taikoo Warehouse & Wharf Area is proposed. In the research process of this paper, the following three conclusions are obtained:

(1) It is reasonable and adaptive to apply the concept of publicness to the research of Guangzhou waterfront industrial heritage renewal strategy. After sorting out and analyzing existing studies, the author found that compared with foreign studies, domestic studies on urban waterfront

renewal still lack social and cultural perspectives, and research progress on waterfront industrial heritage renewal is uneven across the country. In Guangzhou, which has rich waterfront industrial heritage, the research on renewal strategy is only in the initial stage. The research perspective is still focused on the material aspects such as historical data combing, policy system and development mode, and there is an extreme lack of social and cultural perspective. Moreover, the localization process of the public concept from the West in China is mainly combined with cultural architecture/space design research. Therefore, the discussion dimension of cultural continuity is extended to the four basic dimensions of accessibility, openness, inclusiveness and recognizability. However, there is still no attempt to apply it to the waterfront industrial heritage. Through comparative analysis of three cases of renewal of waterfront industry heritage in China, Asia and Europe, the application possibility and specific strategy form of concept of publicness in renewal activities of waterfront industry heritage are further clarified. Therefore, applying the concept of publicity to the research on the renewal of Guangzhou waterfront industrial heritage not only supplements the research in Guangzhou and China from the social and cultural perspectives, but also expands the application possibility of the concept of publicity in the multi-types of cultural space.

(2) The overall characteristics of Guangzhou waterfront industrial heritage is obtained and Guangzhou Taikoo Warehouse & Wharf Area is typical in terms of history, heritage characteristics and renewal practice. By combing the evolution of the relationship between urban waterfront space and the city of Guangzhou, and the history and current situation of six waterfront industrial heritage zones, it is concluded that Guangzhou waterfront industrial heritage generally has three characteristics: the weak relationship between industrial park and the city, the integrity and continuity of industrial heritages, and the good interactive relationship between waterfront open space and the surrounding environment. Moreover, the protection system has changed from single goal to multiple goal and from economic benefit orientation to comprehensive benefit orientation. The realized renewal practices have four characteristics: dominant by commercial value, strong autonomy of heritage protection, transformation of

renewal function from single creative park mode to more diversified directions, and different cultural continuity achieved in different types of industry heritage. Through comparative analysis, Guangzhou Taikoo Warehouse & Wharf Area is typical in all aspects, so it is chosen as the site for subsequent detailed investigation and design.

(3) Extraction of current problems in Guangzhou Taikoo Warehouse & Wharf Area and proposing specific renewal strategies. Through detailed research on Guangzhou Taikoo Warehouse & Wharf Area from nine dimensions, including location, history and culture, population, transportation, facility, landscape, renewal history, status quo of utilization, and crowd characteristics and evaluation, it is found that there are problems of privatization of waterfront landscape and industrial heritage in this area, as well as disconnection with the city, which are specifically manifested as poor public transport connectivity, weak relationship between the first and second phase of the renewal project, the over-commercialized renovation activities which blindly cater to the needs and aesthetics of young consumer groups and high-spenders, the lack of openness and inclusiveness for various users, and the covered up industrial characteristics. Therefore, in the end of this paper an overall renewal design scheme for the whole area of Taikoo Warehouse & Wharf Area is proposed. Based on the concept of publicness, specific design strategies are formulated from four aspects: protection and continuation of industrial heritage, multi-layered transportation system, mixed function organization and flexible interface of different space.

Innovation

By researching on domestic and foreign theories and practices of waterfront industrial heritage and the concept of publicness, the status quo of Guangzhou waterfront industrial heritage and the status quo of Guangzhou Taikoo Warehouse & Wharf Area, the paper reveals the domestic research trend of the concept of publicness in the cultural space design direction, and the

insufficient consideration of social and cultural factors in the theoretical research and practice of Guangzhou waterfront industrial heritage renewal. The innovation of this paper can be concluded in the following two aspects of theoretical research and design strategy.

(1) In terms of theoretical research, by summarizing and analyzing the domestic and foreign research status of the concept of publicness, four basic principles of accessibility, openness, inclusiveness and recognizability are summarized, and based on domestic research progress, the importance of intangible elements such as history, culture and aesthetics in improving the quality of public activities in the space is clarified. Consequently, cultural continuity is innovative introduced as the fifth basic principle of the concept of publicness. In addition, this paper innovatively applies the concept of publicness to the research on the renewal strategy of Guangzhou waterfront industrial heritage, which has exploratory significance both for the research on Guangzhou waterfront industrial heritage and the concept of publicness.

(2) In terms of design strategy, this paper proposes a new direction of integrated design for the first and second plots of Guangzhou Taikoo Warehouse & Wharf Area, and proposes specific design schemes based on the concept of publicness that can more effectively improve the public value of waterfront space and industrial heritage and enhance the connection with the city, hoping to provide references for designers involved in the renewal project.

Shortcoming and Prospect

Due to the limited time and energy of the author, this paper mainly has the following two deficiencies.

(1) In the investigation of Guangzhou Taikoo Warehouse & Wharf Area, the author mainly

adopts the methods of field observation, interview and questionnaire for quantitative and qualitative analysis. However, the quantitative analysis method is relatively shallow and fails to use more multidimensional analysis methods to compare and display the evaluation of different populations.

(2) In the renewal strategy for Guangzhou Taikoo Warehouse & Wharf Area, the strategy mainly focuses on the spatial level, and does not respond to the policy system, development mode, spatial transformation and other issues mentioned above. The discussion on the influence of development bodies and macro events on the shaping of spatial publicness is still lacking, which needs further thinking and research.

Therefore, in future studies, more in-depth and accurate research on Guangzhou Taikoo Warehouse & Wharf Area can be carried out by obtaining more information from more channels and combining more quantitative analysis methods. At the same time, more comprehensive and systematic renewal strategies for Guangzhou Taikoo Warehouse & Wharf Area can be formulated by combining political and economic approaches.

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